SONY

WRT-800A

SERVICE MANUAL

AU Model

⚠ WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

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SONY

3-860-354-**31**(1)

UHF Synthesized Wireless Microphone

Operating Instructions

WRT-800A

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Precautions

- The unit is designed for use in ambient temperature range of 0°C to 50°C (32°F to 122°F).
- Do not place the unit on or near heat sources, such as lighting equipment, power amplifiers, or in a place subject to direct sunlight or excessive moisture. In such places, the external finish or internal parts of the unit may be damaged.
- If the unit is used in a very humid or dusty place or in a place subject to an active gas, clean its surface as well as the connectors with a dry, soft cloth soon after use. Lengthy use of the unit in such places or not cleaning it after its use in such places may shorten its life.
- When cleaning the unit, never use organic solvents such as thinner or benzine, which will damage the finish of the unit.
- The unit has been factory adjusted precisely. Do not tamper with its internal parts or attempt to repair it.

Introduction

The WRT-800A is a wireless microphone to be used in combination with the WRR-800A/801A UHF Synthesized Diversity Tuner for an 800 MHz band UHF synthesized wireless microphone system for broadcast or movie production purpose.

The WRT-800A can also be used in conventional Sony Wireless Microphone System composed of the WRT-810A/820A UHF Synthesized Transmitter, WRR-810A/820A/840A/850A UHF Synthesized Diversity Tuner, etc.

Features

Easy selection of 102 channels
The microphone can operate on any one of 102 carrier frequencies selected by a simple operation.

Operation powered by easily available battery
The built-in high-efficiency DC-DC converter allows stable operation, for about 12 hours continuously, with just a single LR6 (size AA) alkaline battery.

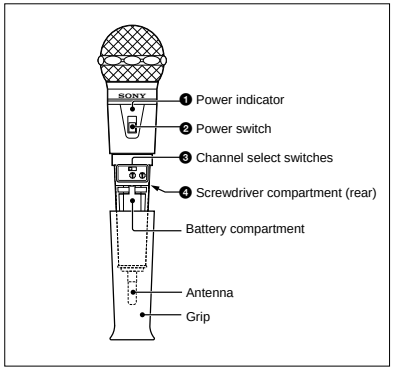
Remote battery alarm on tuner
This microphone has capability of transmitting "Battery status information" to the WRR-800A/801A/850A to give advance warning of battery depletion.
The information is sent to the WRR-800A/801A/850A in approx. 1 hour advance to battery exhaust so that they can safely replace battery of the microphone.
When the WRR-800A/801A/850A receives the information, the LED and the LCD on the panel start flashes.

RF carrier with tone signal
The unit transmits the RF carrier accompanied by a tone signal, enabling the tuner with a tone squelch circuit to take out only the target audio signal received.

Wide dynamic range and low noise
The compander (compressor/expander) system enables transmission over a wide dynamic range with minimum noise.

Compact helical antenna

Parts Identification



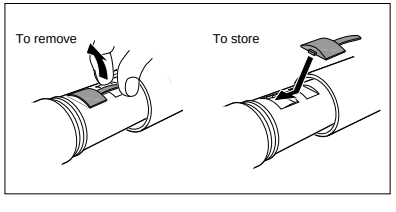
❶ Power indicator
Lights when the power of the wireless microphone is turned ON. Promptly replace the battery if the indicator does not light even when you turn the power on.

❷ Power switch
Turns the power of the wireless microphone ON or OFF.

❸ Channel select switches
For setting the transmitting channel.

❹ Screwdriver compartment
To store the supplied screwdriver for channel setting.

Removing/storing the screwdriver

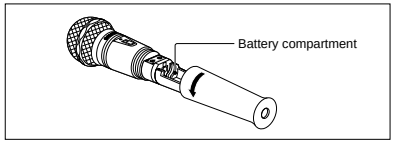


Power Supply

The microphone can operate on one LR6 (size AA) alkaline battery continuously for about 12 hours at 25°C (77°F).

Inserting the batteries

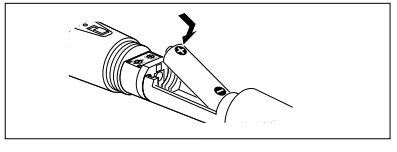
1 Rotate the grip counterclockwise and slide it down.



Note

The grip may separate from the body. Be careful not to drop it.

2 Match the polarity and insert the battery.



3 Return the grip to its original position and rotate it clockwise to secure.

Battery indication

When you turn the power on, the power indicator lights. When the battery level becomes low, the indicator goes off as a warning. Promptly replace the battery if the power indicator does not light when you turn the power on.

- The BATT indication on the WRR-800A/801A/850A starts flashing in synchronization when the power indicator of this wireless microphone goes off.

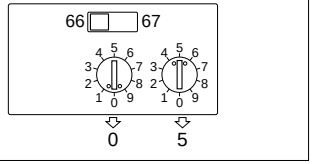
SECTION 1
OPERATING INSTRUCTIONS

This section is extracted from operation manual

Channel Setting

Check that the power is off and set the channel select switches for the desired channel using the supplied screwdriver.
Set the upper slide switch to 66 or 67 and set the rotary switches to the last two digits of the desired wireless channel.

Example: To set to channel 66-05



Notes

- Turn off the microphone when setting the transmitting channel to eliminate interference or noise on other wireless equipment.
  If the channel select switches are operated while the microphone is on, the power indicator flashes as a warning.
- If you set to any channel other than those listed in the table on the page on the rear, the power indicator flashes as a warning.
- The microphone does not transmit while the power indicator is flashing.

Specifications

Transmitter and modulator section

Oscillator	Crystal controlled PLL synthesizer
Carrier frequencies	792.250 to 805.500 MHz (102 settings at 125 kHz intervals)
Tone signal	32.768 kHz
Type of emission	110KF3E
RF power output	5 mW
Frequency stability	Within ±0.002%
Type of antenna	1/4-wavelength helical
Pre-emphasis	50 µs
Reference deviation	±5 kHz (94 dB SPL, 1 kHz) (0 dB SPL = 2×10^{-5}Pa)
Frequency response	100 to 13,000 Hz
Signal-to-noise ratio	57 dB or more (A-weighted, with reference deviation at WRR-800A/801A)
Maximum input	128 dB SPL (1 kHz)
Microphone unit	Electret condenser microphone
Directivity	Uni-directional

Power section

Power requirements	1.5 V DC (one LR6/size AA alkaline battery)
Battery life	Approx. 12 hours at 25°C (77°F) with Sony LR6 alkaline battery

General

Operating temperature	0°C to +50°C (32°F to 122°F)
Storage temperature	–30°C to +60°C (–22°F to +140°F)
Dimensions	55 × 216 mm ($2^{1}/_{4} \times 8^{5}/_{8}$ inches) (Maximum dia. × length)
Mass	Approx. 200 g (7.1 oz) including battery

Supplied accessories

Microphone holder (1)
Stand adaptor PF1/2 to W3/8 (1)
Screwdriver (1)
Operating Instructions (1)

Design and specifications are subject to change without notice.

Notes on Use

On channel selection

- The microphone/transmitter and tuners are classified by frequency band.
  A 14-MHz frequency band (or two consecutive-numbered TV channels, such as 66 and 67 of the WRT-800A) is assigned to each microphone/transmitter and tuner model.
  In building up a UHF wireless microphone system, be sure to combine a microphone/transmitter and a tuner having the same TV channel number.
- Make sure that the channel selected on the microphone is the same as that selected on the tuner used in the same system.
- Depending on the noise or interference conditions, the selectable channels may not necessarily all be usable. If necessary, you can determine the usable channels by stepping the channel selection through a number of channels on a tuner with the microphone set to OFF. Those channels on which the RF indicator of the tuner does not light are usable.
- If there is a TV broadcasting station near by, do not use the station's channel.

On microphone system operation

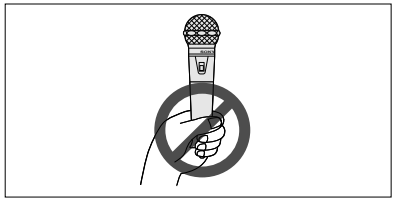
- To operate with 2 or more channels, maintain a distance of at least 30 cm (1 ft.) between each pair of microphones. *For details of operation with 2 or more channels, refer to the Operating Instructions for the WRR-800A/801A/850A UHF Synthesized Diversity Tuners.*
- Ensure that the tuners set to channels not being used are either turned off or set to the minimum output level.
- When powering the microphone on or off, to keep the noise to a minimum, set the audio output level from the tuner or mixer to a minimum.
- Powering the microphone on without checking the channel selection first may interfere with the operation of other microphones/transmitters, if the current setting is already being used.
- Separate the reception antennas and the microphone by more than 3 m (10 ft.).

On battery

- Use a new alkaline battery, and check the recommended "useby" date on the bottom of the battery.
- Be careful to insert the battery with the correct polarity.
- When not using the wireless microphone for a long period, remove the battery to avoid leakage. If a battery does leak, clean all leakage from the unit and insert new battery. Leakage left in the unit may cause poor battery contact. If there seems to be poor battery contact, consult your Sony dealer.

On the antenna

Do not touch the antenna while using as it will significantly degrade good performance, causing drop outs, etc.



Channels and Carrier Frequencies

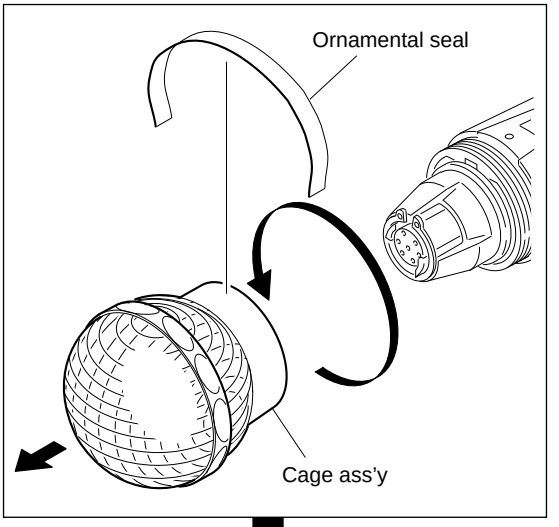
The WRT-800A can transmit on any selected wireless channel among those listed below.

WL Channel	Frequency (MHz)	WL Channel	Frequency (MHz)
66-01	792.250	67-01	799.250
66-02	792.375	67-02	799.375
66-03	792.500	67-03	799.500
66-04	792.625	67-04	799.625
66-05	792.750	67-05	799.750
66-06	792.875	67-06	799.875
66-07	793.000	67-07	800.000
66-08	793.125	67-08	800.125
66-09	793.250	67-09	800.250
66-10	**793.375**	**67-10**	**800.375**
66-11	793.500	67-11	800.500
66-12	793.625	67-12	800.625
66-13	793.750	67-13	800.750
66-14	793.875	67-14	800.875
66-15	794.000	67-15	801.000
66-16	794.125	67-16	801.125
66-17	794.250	67-17	801.250
66-18	794.375	67-18	801.375
66-19	794.500	67-19	801.500
66-20	**794.625**	**67-20**	**801.625**
66-21	794.750	67-21	801.750
66-22	794.875	67-22	801.875
66-23	795.000	67-23	802.000
66-24	795.125	67-24	802.125
66-25	795.250	67-25	802.250
66-26	795.375	67-26	802.375
66-27	795.500	67-27	802.500
66-28	795.625	67-28	802.625
66-29	795.750	67-29	802.750
66-30	**795.875**	**67-30**	**802.875**
66-31	796.000	67-31	803.000
66-32	796.125	67-32	803.125
66-33	796.250	67-33	803.250
66-34	796.375	67-34	803.375
66-35	796.500	67-35	803.500
66-36	796.625	67-36	803.625
66-37	796.750	67-37	803.750
66-38	796.875	67-38	803.875
66-39	797.000	67-39	804.000
66-40	**797.125**	**67-40**	**804.125**
66-41	797.250	67-41	804.250
66-42	797.375	67-42	804.375
66-43	797.500	67-43	804.500
66-44	797.625	67-44	804.625
66-45	797.750	67-45	804.750
66-46	797.875	67-46	804.875
66-47	798.000	67-47	805.000
66-48	798.125	67-48	805.125
66-49	798.250	67-49	805.250
66-50	**798.375**	**67-50**	**805.375**
66-51	798.500	67-51	805.500

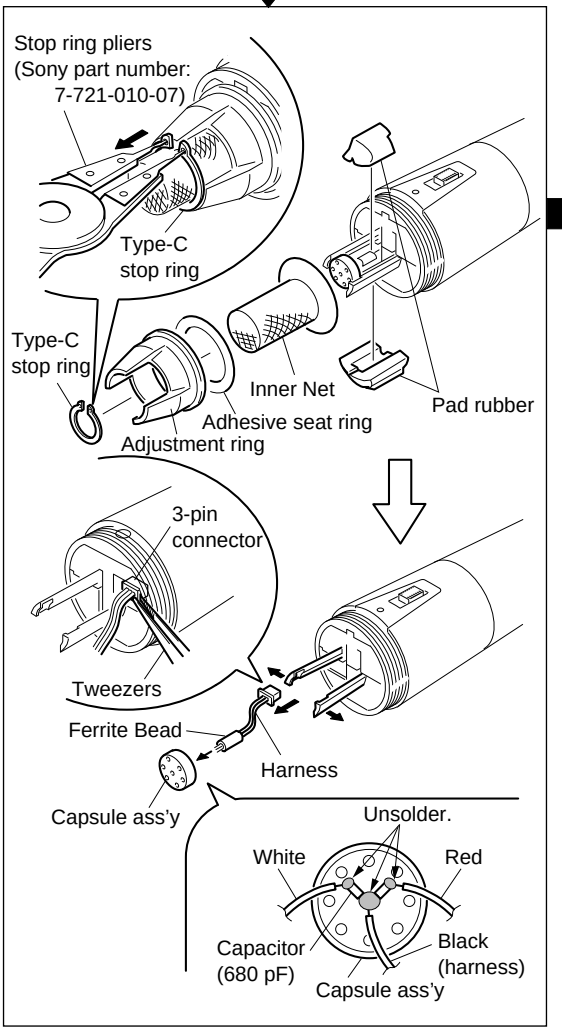
SECTION 2
SERVICE OVERVIEW

2-1. Disassembly

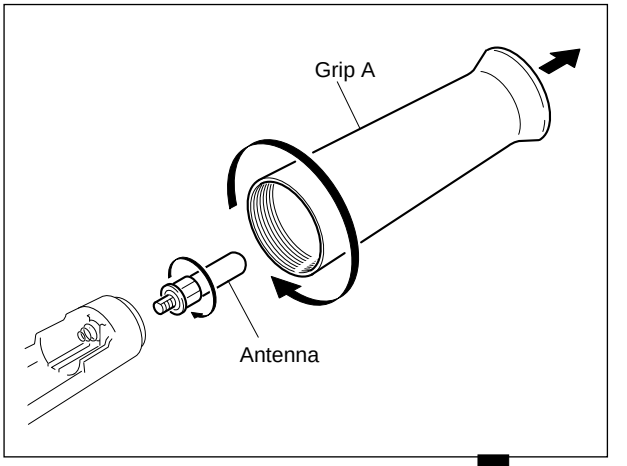
Cage Ass'y



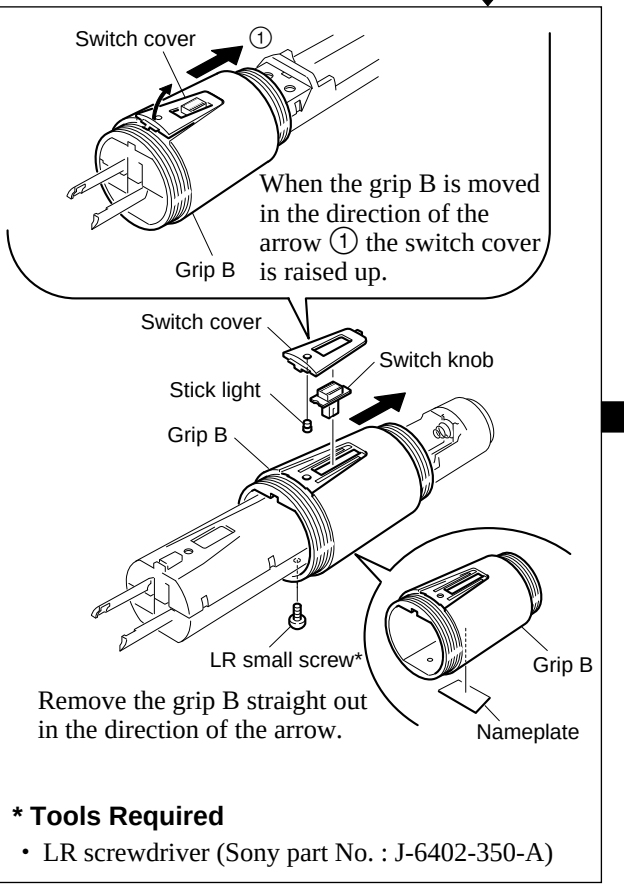
Capsule Ass'y



Grip A, Antenna



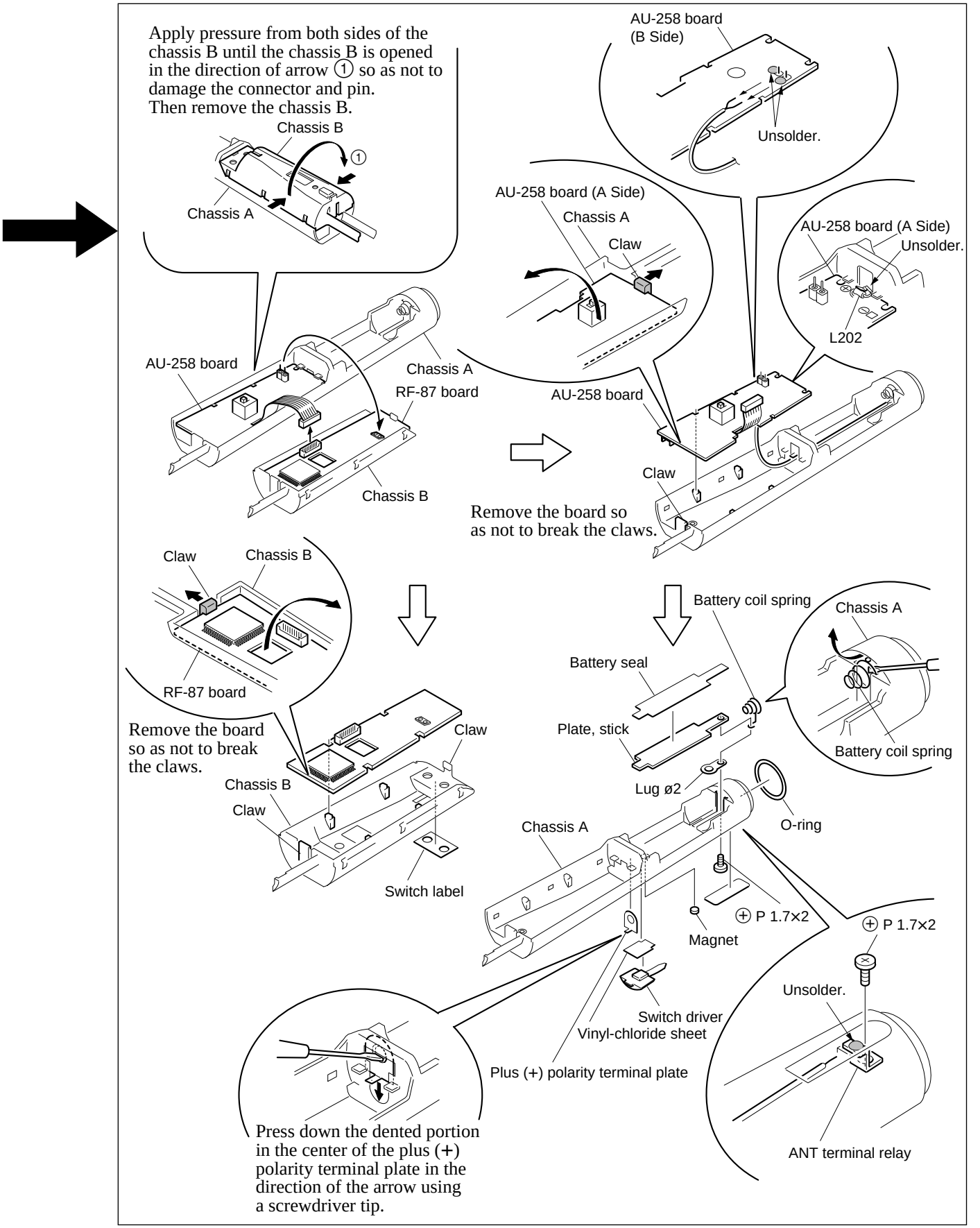
Grip B, Switch Cover, Switch Knob



*** Tools Required**

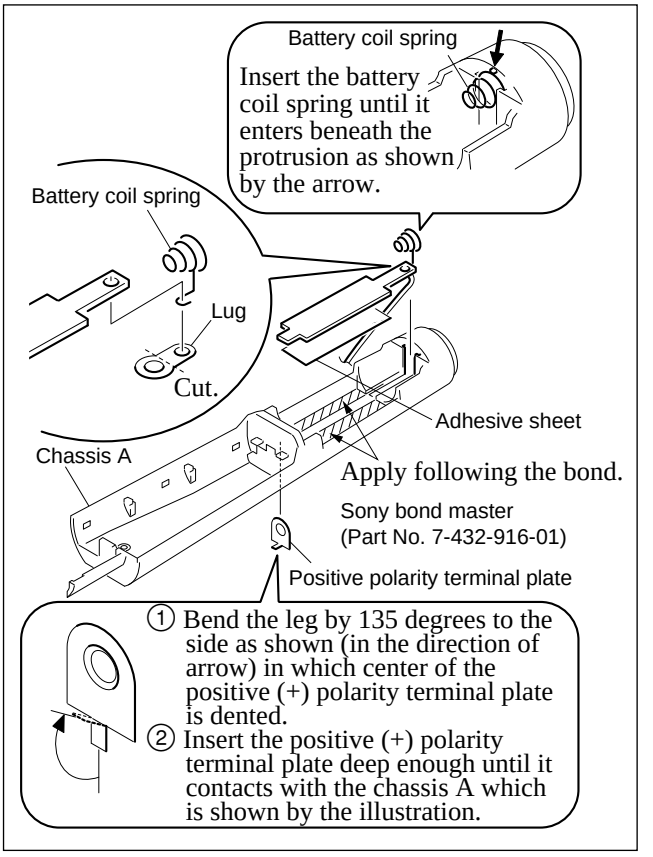
- LR screwdriver (Sony part No. : J-6402-350-A)

AU-258 Board, RF-87 Board, Chassis A, Chassis B

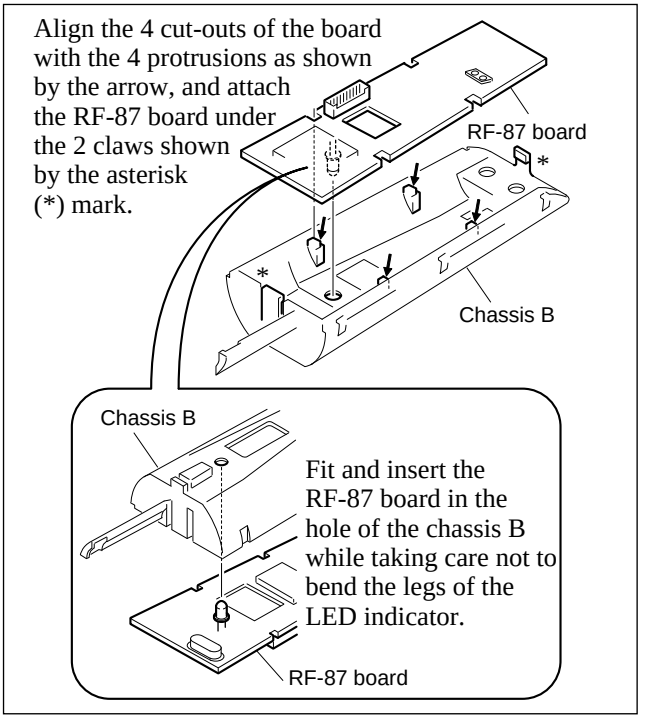


2-2. Notes When Assembling Parts

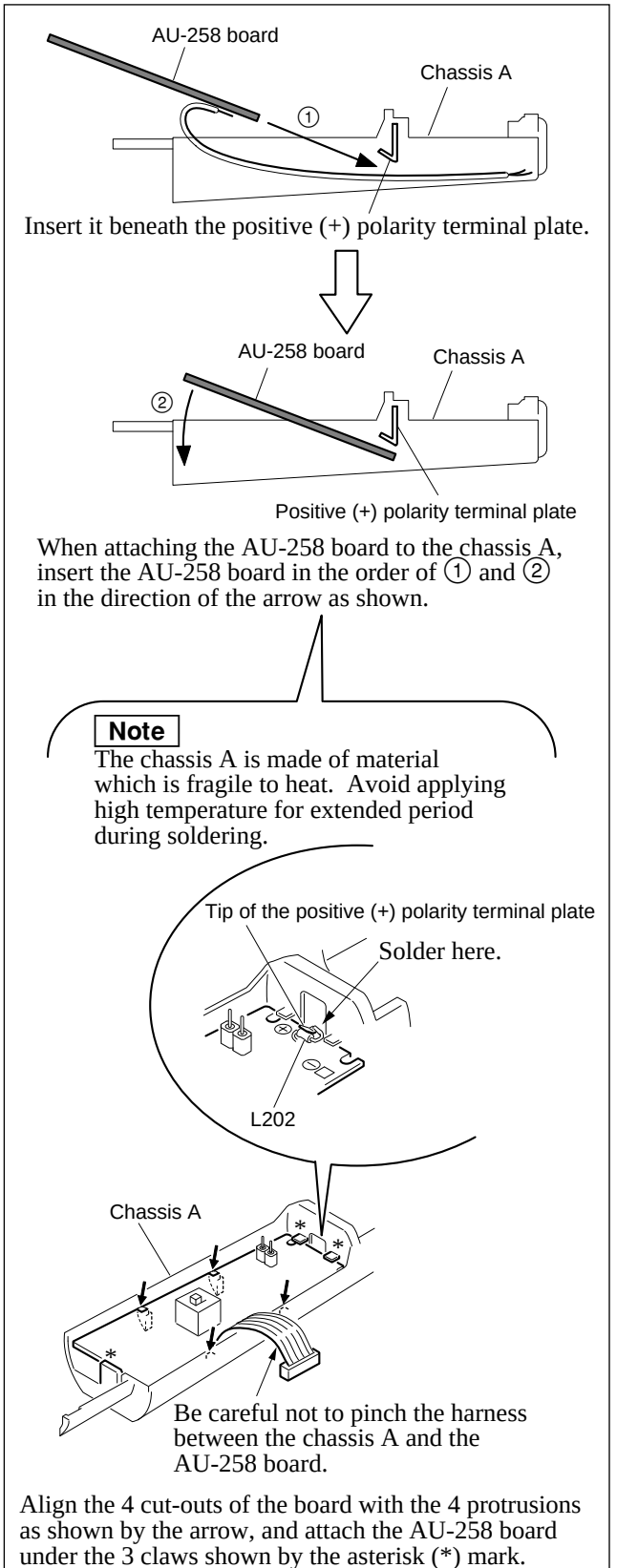
1. Positive (+) polarity terminal plate, battery coil spring


Battery coil spring
Insert the battery coil spring until it enters beneath the protrusion as shown by the arrow.
Battery coil spring
Lug
Cut.
Adhesive sheet
Chassis A
Apply following the bond.
Sony bond master
(Part No. 7-432-916-01)
Positive polarity terminal plate
① Bend the leg by 135 degrees to the side as shown (in the direction of arrow) in which center of the positive (+) polarity terminal plate is dented.
② Insert the positive (+) polarity terminal plate deep enough until it contacts with the chassis A which is shown by the illustration.

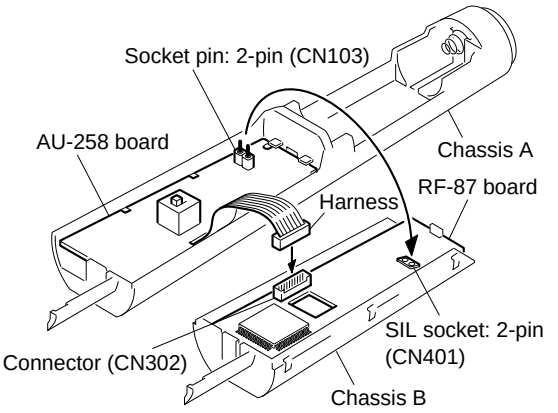
2. RF-87 board


Align the 4 cut-outs of the board with the 4 protrusions as shown by the arrow, and attach the RF-87 board under the 2 claws shown by the asterisk (*) mark.
RF-87 board
*
*
Chassis B
Chassis B
Fit and insert the RF-87 board in the hole of the chassis B while taking care not to bend the legs of the LED indicator.
RF-87 board

3. AU-258 Board

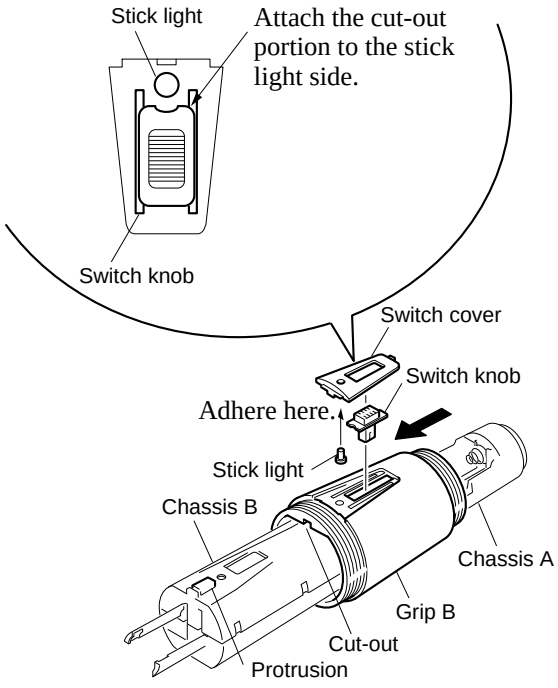

AU-258 board
Chassis A
①
Insert it beneath the positive (+) polarity terminal plate.
AU-258 board
Chassis A
②
Positive (+) polarity terminal plate
When attaching the AU-258 board to the chassis A, insert the AU-258 board in the order of ① and ② in the direction of the arrow as shown.
Note
The chassis A is made of material which is fragile to heat. Avoid applying high temperature for extended period during soldering.
Tip of the positive (+) polarity terminal plate
Solder here.
L202
Chassis A
*
*
*
Be careful not to pinch the harness between the chassis A and the AU-258 board.
Align the 4 cut-outs of the board with the 4 protrusions as shown by the arrow, and attach the AU-258 board under the 3 claws shown by the asterisk (*) mark.

4. RF-87 Board, AU-258 Board



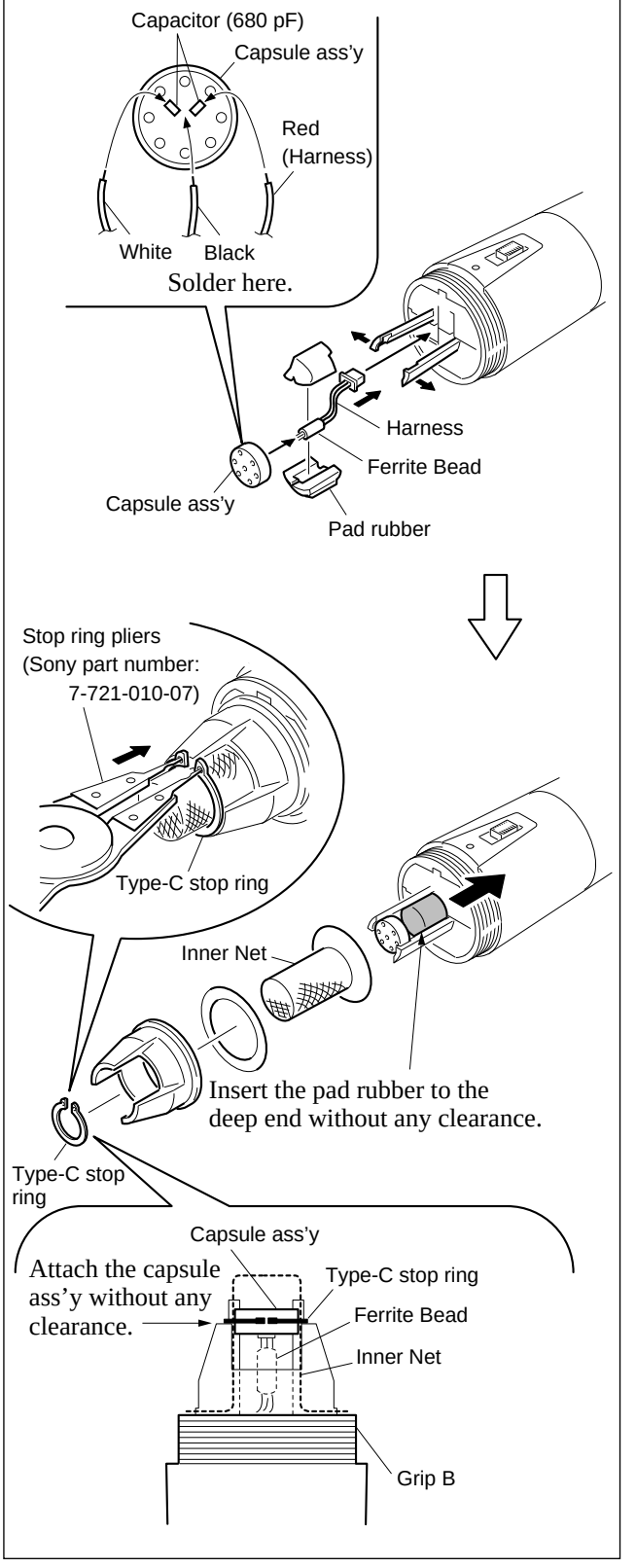
Insert the AU-258 board harness and the 2-pin socket (CN103) to the RF-87 board connector (CN302) and to the SIL the 2-pin socket (CN401) securely and attach the chassis B to the chassis A.

5. Grip B



When attaching the grip B to the chassis A and to the chassis B, insert the chassis B in the direction of the arrow while aligning the protrusion of the chassis B with the cut-out of the grip B.

6. Capsule Ass'y



Section 3
Electrical Alignment

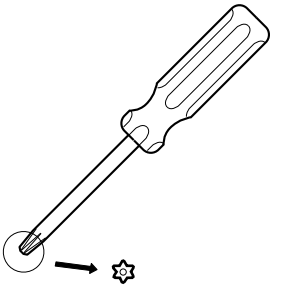
3-1. Equipment and Tools

Equipment Required

Name	Specifications	Model Name
DC POWER SUPPLY	Output reagulated voltage: 0 to 5 V, 2 A	–
DC CURRENT METER	Measurement:300 mA	–
SPECTRUM ANALYZER	Frequency:10 kHz to 5 GHz	ADVANTEST R3371A or equivalent
MODULATION ANALYZER	RF input frequency:150 kHz to 3 GHz	ANRITSU MS616A or equivalent
POWER METER WITH POWER SENSOR	Range: 3 µW to 100 mW	HP453B (Power sensor HP8482A) or equivlent
AUDIO ANALYZER	• OSCILLATOR:20 Hz to 100 kHz • DISTORTION ANALYZER • S/N METER • LEVEL METER	HP8903B (with A-weighted)
FREQUENCY COUNTER	Frequency : 10 Hz to 1000 MHz Effetive digits : 10 digits	HP5358A or equivalent
OSCILLOSCOPE	Frequency: DC to 10 MHz	–
DC VOLT METER	Effective digits: 3 1/2 digits	–

Tools

Name	Part No.	Remarks
RF adjusting connector	–	See next page.
Adjustor	7-721-052-81	0.4×1.3mm
AF input connector	–	See next page.
LR screw driver	J-6402-350-A	For grip removal

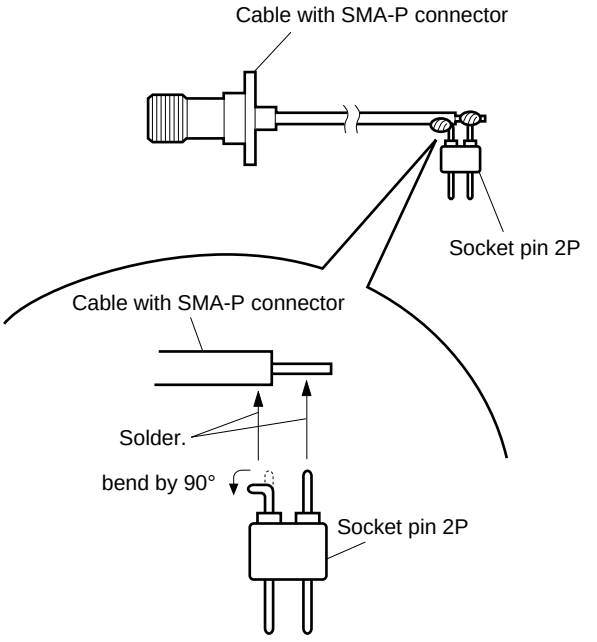


- **How to make a RF adjusting connector**

  Requied Parts

  Cable with SMA-P connector : 1 (Part No.J-6223-090-A)

  Socket Pin 2P : 1 (Part No.1-566-474-11)

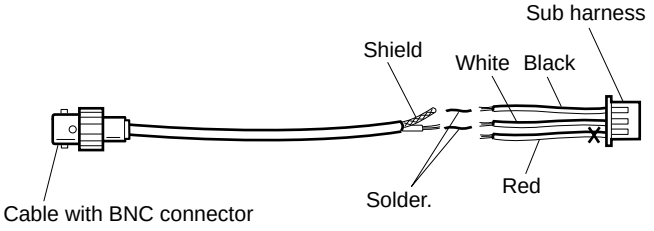


- **How to make an AF input connector**

  Required Parts

  Cable with BNC connector : 1 (Part No.1-555-758-00)

  Sub harness (3P) : 1 (Part No.1-956-140-11)



3-2. Adjustment

This section describes adjustments and checks which must be completed to assure that the specificatisons are complied with.

Make adjustment and checks following the procedure below:

3-2-1. +3V (Vcc) Regulated Voltage Check

↓

3-2-2. Carrier Frequency Adjustment

↓

3-2-3. Reference Frequency Deviation Adjustment

↓

3-2-4. Maximum Frequency Deviation Adjustment

↓

3-2-5. Distortion Ratio Check

↓

3-2-6. S/N Check

↓

3-2-7. Frequency Characteristics Check

↓

3-2-8. RF Power Output Adjustment

↓

3-2-9. Tone Signal Adjustment

↓

3-2-10. Battery Alarm Signal Check

↓

3-2-11. Spurious Emissions Check

1. Preparation

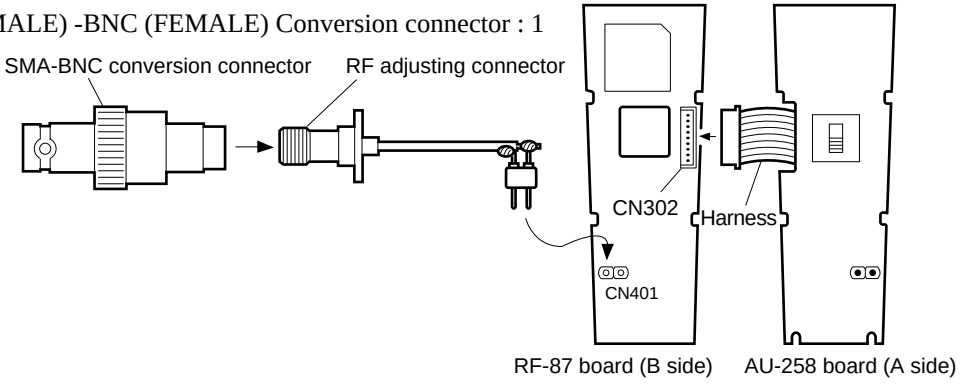
(1) When adjustments are performed, remove the AU-258 and RF-87 boards from WRT-800A unit. Refer to the “Section 2 Service overview” for removal.

(2) Insert the harness of the AU-258 board into the connector CN302 on the RF-87 board. The AU-258 and RF-87 boards must be connected electricalty as shown below.

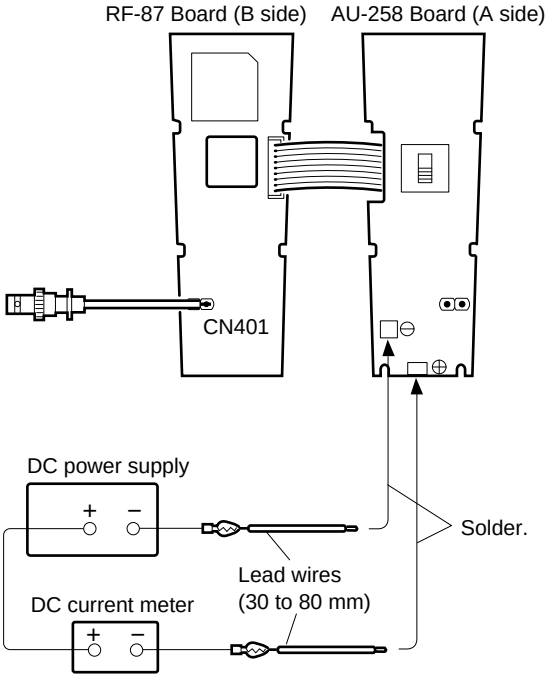
(3) Connect the RF adjusting connector to the anntena connector (CN401/RF-87 board) as shown below.

Required Parts

SMA (MALE) -BNC (FEMALE) Conversion connector : 1



(4) Connecting the DC power supply



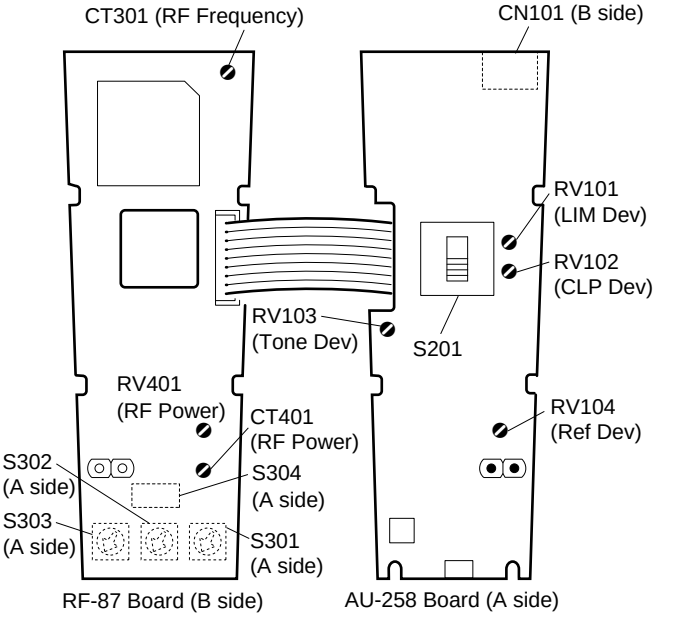
DC power supply : +1.5±0.1 Vdc
DC current meter : 100 mA

Checking

After the DC power supply connection is complete, set the power switch (S201/AU-258 board) to on, and check the level on DC current meter.

DC current meter indication level: 70 to 90 mA

2. Adjustment Location



3-2-1. +3V (VCC) Regulated Voltage Check

Equipment and Tools

DC power supply
DC output voltage:+1.5±0.1 Vdc
DC current meter
DC voltmeter

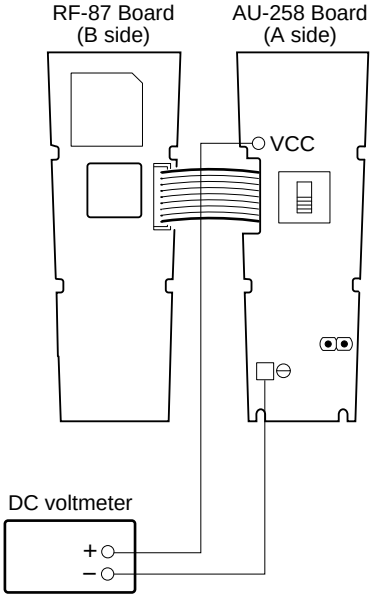
Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Proceduer

(1) Set the POWER switch (S201/AU-258 board) to ON.
(2) Check that the DC voltage for check land (VCC)/AU-258 board to the specified voltage as below.
Specification: DC voltage for check land (VCC) =+3.0±0.1 Vdc



3-2-2. Carrier Frequency Adjustment

Equipment and Tools

DC power supply
DC output voltage:+1.5±0.1 Vdc
DC current meter
Frequency counter
Adjustor (SONY part No.7-721-052-81)
RF adjusting connector (See page 3-2.)

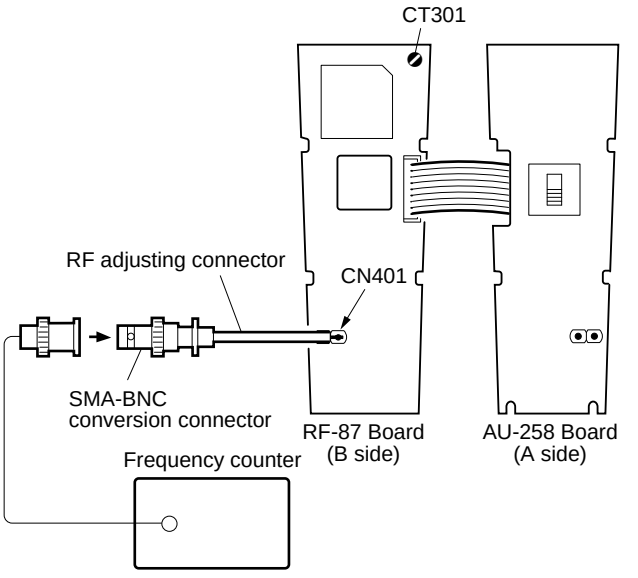
Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

(For connecting the DC power supply, refer to the “Preparations” on page 3-3.)



Procedure

(1) Connect the frequency counter to the CN401/RF-87 board (RF adjusting connector).
(2) Adjust ⊘CT301 so that the frequency counter reading meets the following specification.
Specification:
Carrier frequency mentioned in the table as below.

WRT-800A	Carrier frequency
AU66 model	799.250 MHz ±1 kHz (67-01CH)

Adjustment: ⊘CT301/RF-87 board (B side)

3-2-3. Reference Frequency Deviation Adjustment

Equipment and Tools

DC power supply
DC output voltage: +1.5±0.1 Vdc
DC current meter
Audio analyzer
Modulation analyzer
MEASUREMENT : FM
MEASUREMENT RANGE : AUTO or ±10 kHz
HPF : 50 Hz
LPF : 20 kHz or 15 kHz
DE EMPHASIS : 50 µs
Adjustor (SONY part No.7-721-052-81)
AF input connector (See page 3-2.)
RF adjusting connector (See page 3-2.)

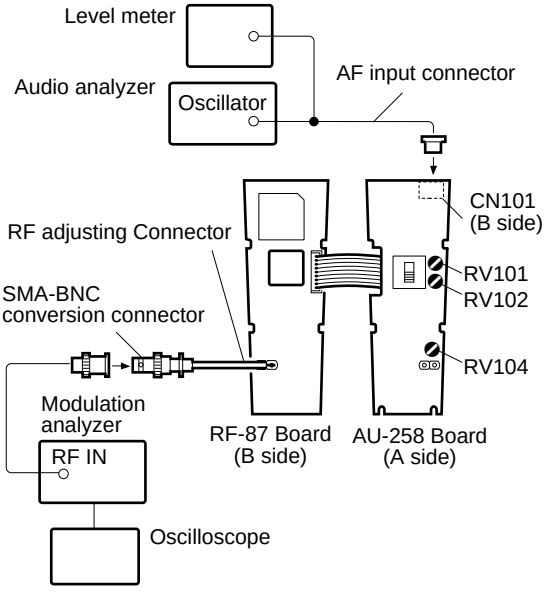
Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-3.)



Procedure

(1) Input 1 kHz, −43.5 dBV (−41.3 dBm) signal to the CN101/AU-258 board with AF input connector.
Note 0 dBV=1 Vrms, 0 dBm=0.775 Vrms
(2) Adjust ⊘RV104 so that frequency deviation for the modulation analyzer reading meets the following specification.
Specification : Frequency deviation=±5 kHz±0.1 kHz
Adjustment : ⊘RV104/AU-258 board (A side)
(3) After the adjustment has been completed, perform the "3-2-4. Maximum Frequency Deviation Adjustment".

3-2-4. Maximum Frequency Deviation Adjustment

Note

Be sure to perform this adjustment after "3-2-3. Reference Frequency Deviation Adjustment" has been completed.

Equipment and Tools

DC power supply
DC output voltage : +1.5±0.1 Vdc
DC current meter
Audio analyzer
Modulation analyzer
MEASUREMENT : FM
MEASUREMENT RANGE : AUTO or ±100 kHz
HPF : 50 Hz
LPF : 20 kHz or 15 kHz
DE EMPHASIS : 50 µs
Oscilloscope
Adjustor (SONY part No.7-721-052-81)
AF input connector (See page 3-2.)
RF adjusting connector (See page 3-2.)

Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

Same as "3-2-3.Reference Frequency Deviation Adjustment".

Procedure

(1) Input 10 kHz, −7.5 dBV(−5.3 dBm) signal to the CN101/AU-258 board with AF input connector.
(2) Adjust ⊘RV102 so that the frequency deviation for the modulation analyzer reading meets the following specification.
Specification : Frequency deviation = maximum
Adjustment : ⊘RV102/AU-258 board (A side)
(3) Input 1 kHz, −7.5 dBV(−5.3 dBm) signal to the CN101/AU-258 board with AF input connector.
(4) Adjust ⊘RV101 so that the frequency deviation for the modulation analyzer reading meets the following specification.
Specification : Frequency deviation = ±26 kHz±0.5 kHz
Adjustment : ⊘RV101/AU-258 board (A side)
(5) Adjust ⊘RV102 so that the frequency deviation for the modulation analyzer reading meets the following specification.
Specification : Frequency deviation = ±24.5 kHz±0.5 kHz
Adjustment : ⊘RV102/AU-258 board (A side)

3-2-5. Distortion Ratio Check

Equipment and Tools

DC power supply
DC output voltage:+1.5±0.1 Vdc
DC current meter
Audio analyzer
Modulation analyzer
MEASUREMENT : FM
MEASUREMENT RANGE : AUTO or ±40 kHz
HPF : 50 Hz
LPF : 20 kHz or 15 kHz
DE EMPHASIS : 50 μs
Oscilloscope
AF input connector (See page 3-2.)
RF adjusting connector (See page 3-2.)

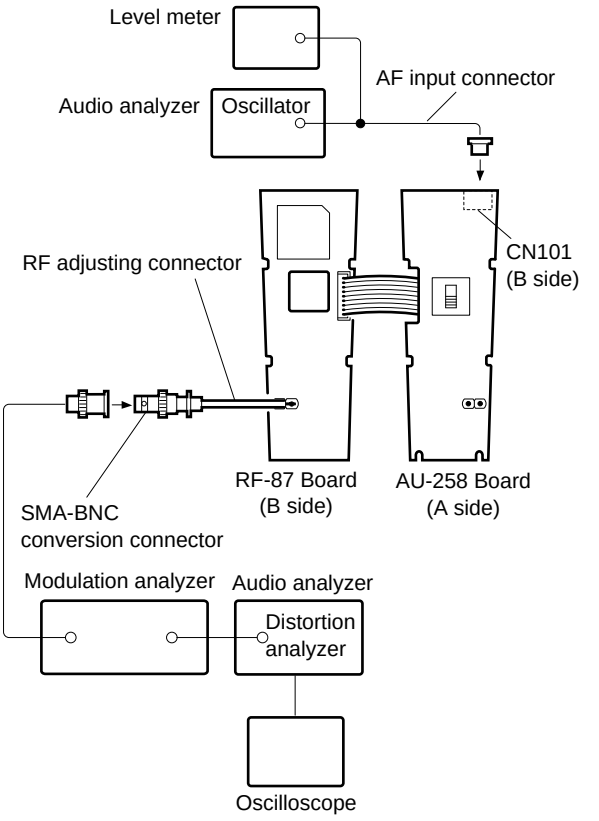
Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

(For connecting the DC power supply, refer to the “Preparations” on page 3-3.)



Procedure

(1) Connect the audio analyzer (distortion analyzer) to the AF OUT connector for the modulation analyzer.
(2) Set the audio analyzer to distortion measurement (DISTORTION mode).
(3) Input 1 kHz, −43.5 dBV(−41.3 dBm) signal to the CN101/AU-258 board from audio analyzer (oscillator) with AF input connector.
Note 0 dBV=1 Vrms, 0 dBm=0.775 Vrms
(4) Check that the distortion analyzer reading is less than 0.9 %.

3-2-6. S/N Check

Equipment and Tools

Same as “3-2-5. Distortion Ratio Check” expect the following setting.

Modulation analyzer

MEASUREMENT RANGE : ±10 kHz

Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

Same as “3-2-5. Distortion Ratio Check”.

Procedure

(1) Connect the audio analyzer (level meter) to the AF OUT connector for the modulation analyzer.

(2) Input 1kHz, −43.5 dBV (−41.3 dBm) signal to the CN101/AU-258 board from audio analyzer (oscillator) with AF input connector.

Note 0 dBV=1 Vrms, 0 dBm=0.775 Vrms

(3) Set the audio analyzer to S/N measurement mode (with A-weight filter ON).

(4) Check that the S/N reading is more than 32 dB.

3-2-7. Frequency Characteristics Check

Equipment and Tools

Same as “3-2-5. Distortion Ratio Check” expect the following setting.

Modulation analyzer

MEASUREMENT RANGE : ±40 kHz

Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

Same as “3-2-5. Distortion Ratio Check”.

Procedure

(1) Connect the audio analyzer (level meter) to the AF OUT connector for the modulation analyzer.

(2) Set the audio analyzer to level meter mode.

(3) Input the 1 kHz, −43.5 dBV (−41.3 dBm) signal to the CN101/AU-258 board from audio analyzer (oscillator).

(4) Reads the indication on the audio analyzer (level meter).

(5) Set the SENSITIVITY on the audio analyzer (level meter) so that the audio analyzer (level meter) reads 0 dB.

(6) Switch the oscillation frequency for the audio analyzer (oscillator) from 1 kHz to 100 Hz.

(7) Check that audio analyzer (level meter) reading is 0±1.0 dB.

(8) Next, switch the oscillation frequency for the audio analyzer (oscillator) from 100 Hz to 10 kHz.

(9) Check that the reading for the audio analyzer (level meter) is −1.0±1.0 dB.

3-2-8. RF Power Output Adjustment

Equipment and Tools

DC power supply
DC output voltage :+1.5±0.1 Vdc
DC current meter
Power meter (with power sensor)
RF adjusting connector (See page 3-3.)

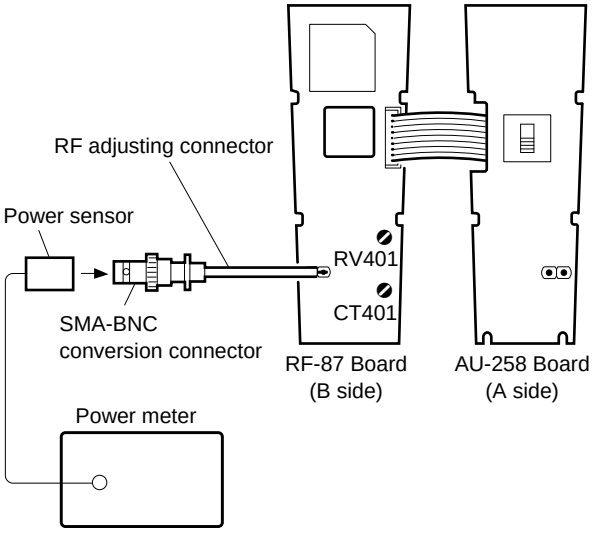
Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-3.)



Procedure

(1) Connect the power meter (with power sensor) to the CN401/RF-87 board (RF adjusting connector).
(2) Adjust ⊘CT401 so that the power meter reading meets the following specification.
Specification : Power meter reading = Maximum
Adjustment : ⊘CT401/RF-87 board (B side)
(3) Adjust ⊘RV401 so that the power meter reading meets the following specification.
Specification : Power meter reading = 5.0±0.2 mW
Adjustment : ⊘RV401/RF-87 board (B side)

3-2-9. Tone signal Adjustment

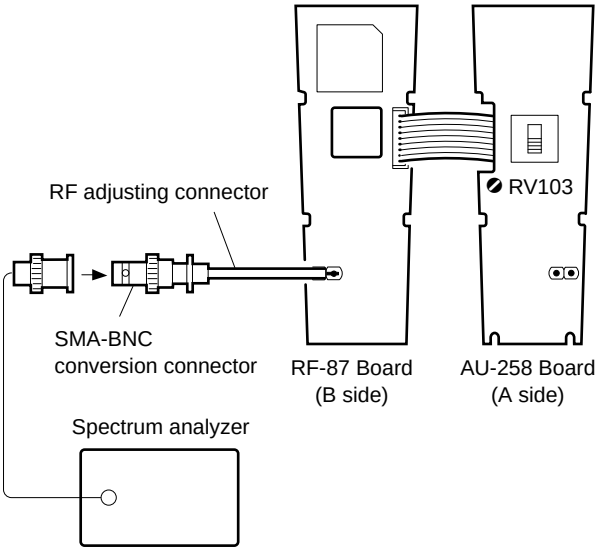
Equipment and Tools

DC power supply
DC output voltage : +1.5±0.1 Vdc
DC current meter
Frequency counter
Spectrum analyzer
Modulation analyzer
RF adjusting connector (See page 3-2.)

1. Frequency deviation adjustment

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-3.)



Switch and control setting

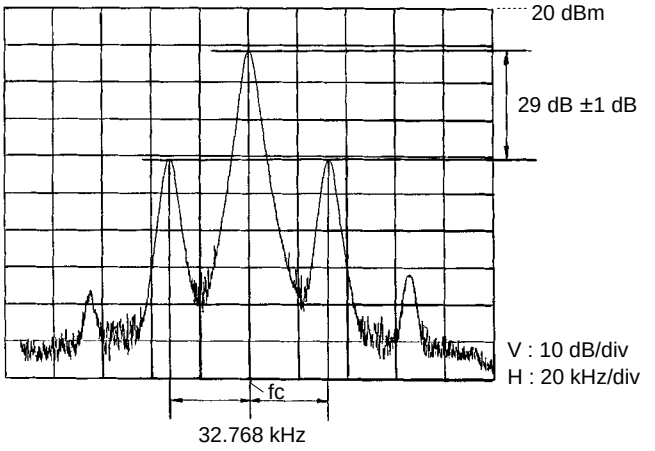
S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Procedure

(1) Set the spectrum analyzer as below:
CENTER FREQUENCY (fc) : 799.250 MHz
REFERENCE LEVEL : 20 dBm
FREQUENCY SPAN : 200 kHz(20 kHz/DIV)
RBW (resolution band width) : 3 kHz
VBW (video band width) : 1 kHz
ATT : 20 dB

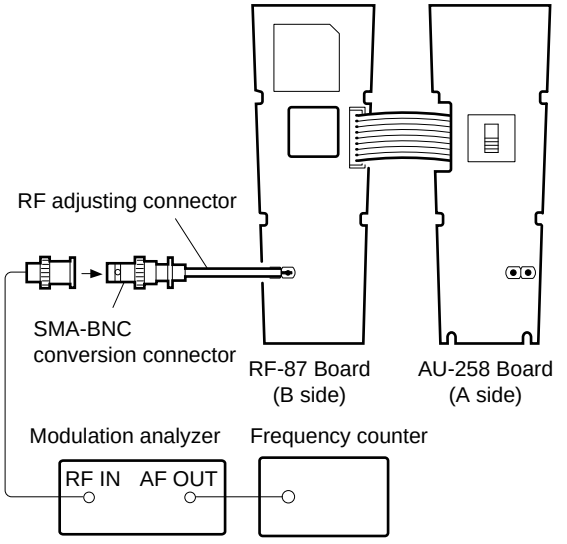
(2) Adjust ⊘RV103/AU-258 board so that level between carrier frequency (frequency center level) on spectrum analyzer and tone signal is within 29 dB ± 1 dB.



2. Frequency check

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-3.)



Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Procedure

(1) Set the modulation analyzer as below:
MEASUREMENT : FM
MEASUREMENT RANGE : 40 kHz
HPF : 4 kHz
LPF : >20 kHz
DE EMPHASIS : OFF

(2) Check that the frequency counter (resolution : 0.1 Hz setting) reading is 32.768 kHz± 1 Hz.

3-2-10. Battery Alarm Signal Check

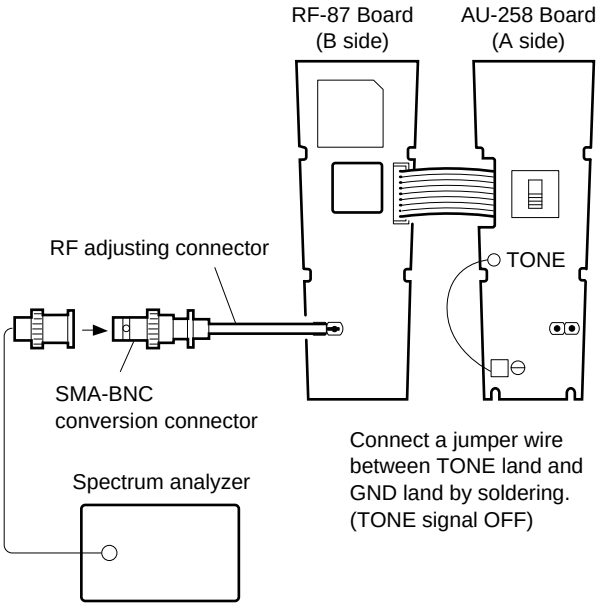
Equipment and Tools

DC power supply
DC output voltage:+1.5±0.1 Vdc
DC current meter
Frequency Counter
Spectrum analyzer
Modulation analyzer
RF adjusting connector (See page 3-2.)

1. Frequency deviation check

Connections

(For connecting the DC supply, refer to the “Preparations” on page 3-3.)



Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

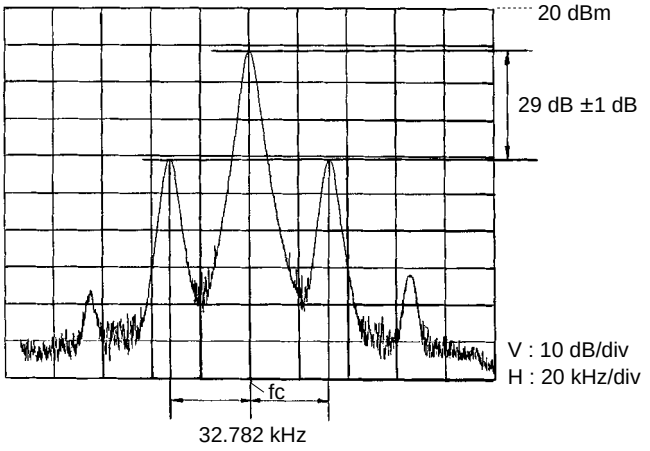
WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Procedure

(1) Set the spectrum analyzer as below:
CENTER FREQUENCY (fc) : 799.250 MHz
REFERENCE LEVEL : 20 dBm
FREQUENCY SPAN : 200 kHz (20 kHz/DIV)
RBW (resolution band width) : 3 kHz
VBW (video band width) : 1 kHz
ATT : 20 dB

(2) Decrease gradually the DC output voltage of the DC regulated power supply and confirm that the battery alarm signal turns on at 1 V±0.1 V.

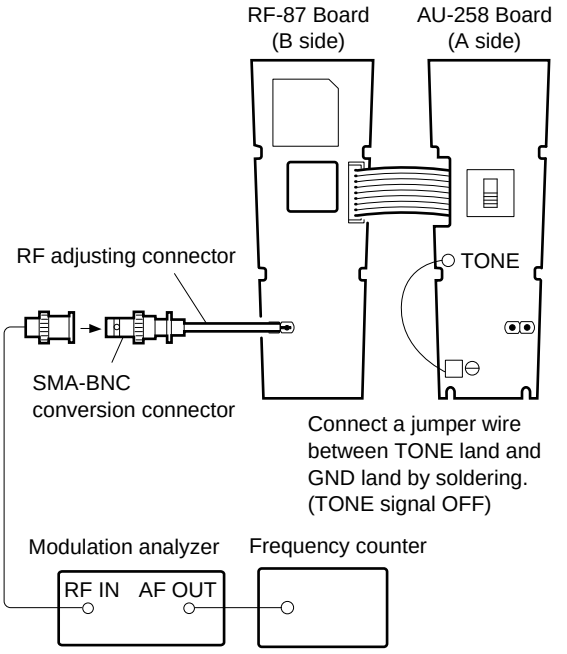
(3) Check that level difference between carrire frequency (center frequency level) on spectrum analyzer and battery alarm signal is within 29 dB ±1 dB.



2. Frequency check

Connections

(For connecting the DC supply, refer to the “Preparations” on page 3-3.)



Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Procedure

(1) Set the modulation analyzer as below:

MEASUREMENT	: FM
MEASUREMENT RANGE	: 40 kHz
HPF	: 4 kHz
LPF	: >20 kHz
DE EMPHASIS	: OFF

(2) Set the DC output voltage of DC power supply to 1V ±0.1 V so that battery alarm signal goes on.

(3) Check that the frequency counter (resolution : 0.1 Hz) reading is 32.782 kHz± 1 Hz.

(4) After the checking, remove (unsolder) the jumper wire between TONE and GND on the AU-258 board.

3-2-11. Spurious Emissions Check

Equipment and Tools

DC power supply
DC output voltage: +1.5±0.1 Vdc
DC current meter
Spectrum analyzer
RF adjusting connector (See page 3-2.)

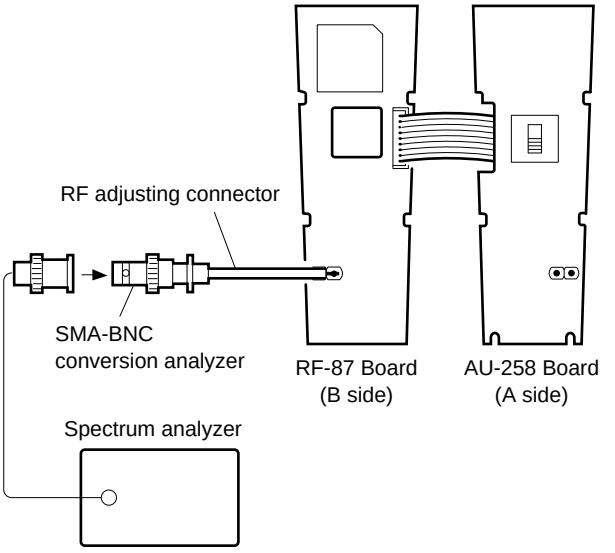
Switch and control setting

S301, S302, S303, S304/ RF-87 board (A-side)

WRT-800A	S301	S302	S303	S304	Channel setting
AU66 model	–	0	1	OFF	67-01

Connections

(For connecting the DC power supply, refer to the “Preparations” on page 3-3.)

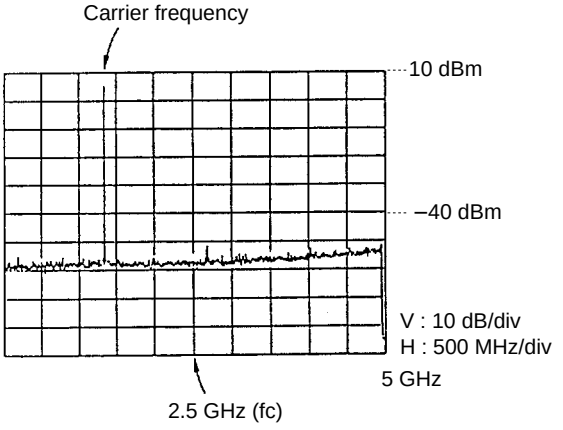


Procedure

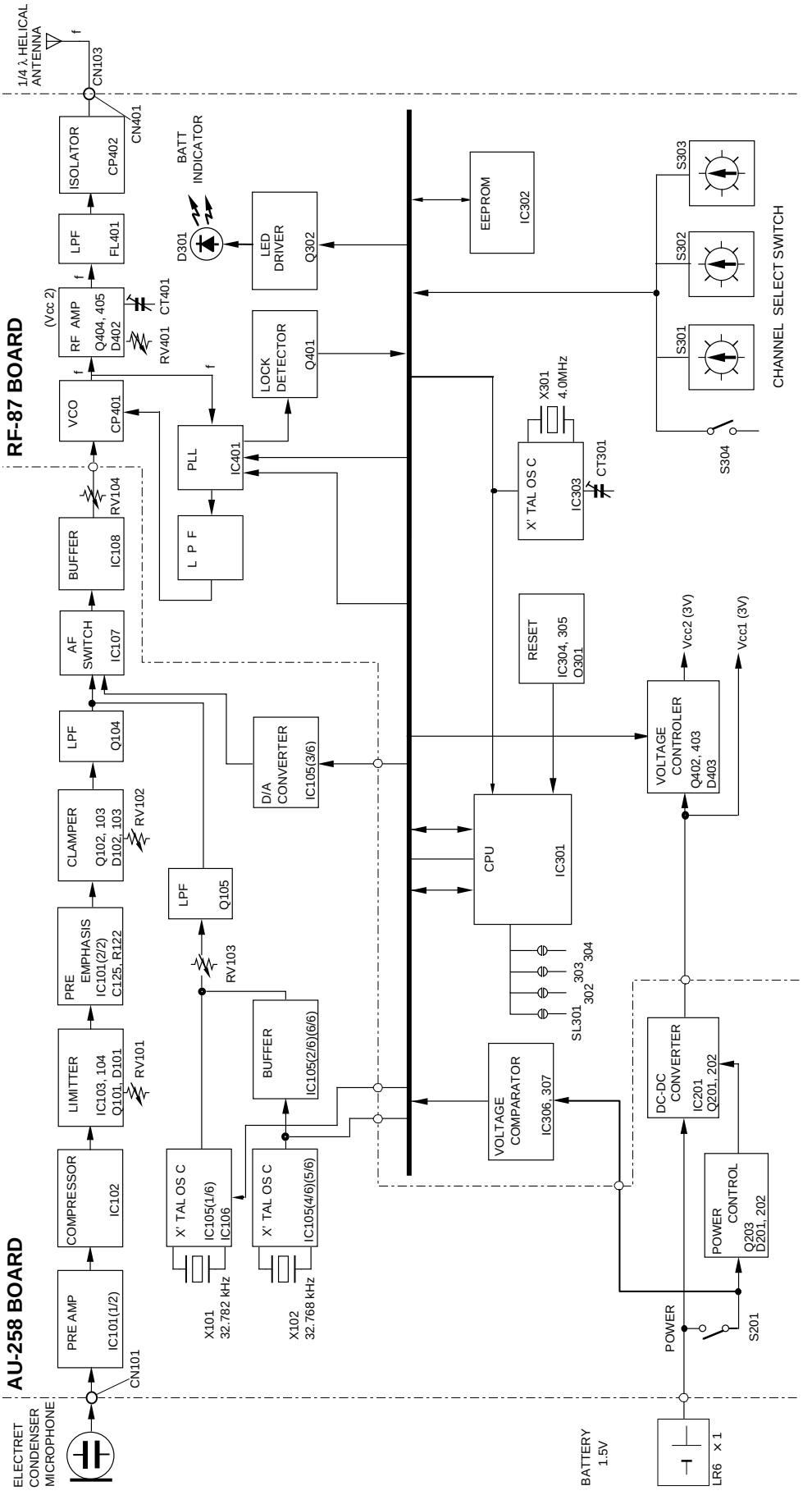
(1) Set the spectrum analyzer as below;

CENTER FREQUENCY(fc)	: 2.5 GHz
REFERENCE LEVEL	: 10 dBm
FREQUENCY SPAN	: 5 GHz or Full span (500 MHz/DIV)
RBW (resolution band width)	: 300 kHz
ATT	: 20 dB

(2) Check that the spurious emissions level reading for the spectrum analyzer remains less than −40 dBm.



SECTION 4
BLOCK DIAGRAM



Description

WRT-800A is comprised of the following:

AU-258 board
- Audio circuit block ..... Ref. No. 100s
- Power supply circuit block ..... Ref. No. 200s

RF-87 board
- CPU and peripheral circuit block ..... Ref. No. 300s
- RF circuit block ..... Ref. No. 400s

AU-258 board

• Audio circuit block

The audio signal which is input from the input connector (CN101) is input to the pre amplifier circuit (IC101 (1/2)). The audio signal which is amplified by IC101 is input to the compressor circuit (IC102). The audio signal is compressed to a signal level of 2:1 (1/2) by the compressor circuit and then inputs to the limiter circuit (IC103, IC104, Q101). Limiter level is adjusted by the RV101. The limiter control signal is fed back from Q101 to the compander circuit (IC102) and activates the limiter operations. The audio signal is output to the limiter circuit and the pre-emphasis circuit (IC101(2/2)). Note that time constant for the pre-emphasis is 50μs. The audio signal which is output from the pre-emphasis circuit is input to the clipper circuit (Q102,Q103). The clipping level is adjusted by the RV102. The audio signal that has been clipped when the input signal amplitude is high, is wave-shaped by the low-pass filter (Q104).
The audio signal is mixed with the tone signal (X102; 32.768 kHz) and battery alarm signal (X101; 32.782 kHz), and inputs to the analog switch (IC107). The tone signal level and battery alarm signal level are adjusted by the RV103. The mixed audio signal is sent to RF circuit block (VCO, CP401) of RF-87 board via the reference level control (RV104).

• Power supply circuit block

The DC-DC converter circuit (IC201, Q202, Q203) extracts the 3 V (VCC) from the battery voltage (0.9 to 1.8 V) and supplies to individual circuits. Each of operation timing is controlled by the CPU (IC301). The DC-DC converter IC (IC201) is turned ON and OFF by the power switch circuit (D202, Q201) which is originally controlled to be switched ON and OFF by the POWER switch (S201). The diode D201 of the power switch circuit supplied power to the DC-DC converter IC (IC201) during when the main power is ON to assist building up IC201 when the main power is turned on.
When the POWER switch (S201) is turned OFF, Q201 detects the OFF state of the POWER switch (S201) and sends the detection signal to CPU (IC301). This is done to turn off the tone signal before the RF carrier signal is turned off.
The power supply voltage 3 V (VCC) for circuit is turned off about one second after the POWER switch (S201) is switched to OFF position.

• Battery indicator

IC306 always monitors the battery voltage. When the battery voltage drops to 1.0 V, IC306 sends the detection signal to CPU (IC301).
The battery alarm signal is oscillated at all times by an oscillator circuit (IC105 (1/6), X101: 32.782 kHz). When the switching circuit (IC106) is turned on by the control signal (LVD signal) from CPU (IC301), the battery alarm signal is super-imposed on the RF carrier signal. At the same time, the battery indictor LED (D301) of the main unit is turned off.
The other device which monitors the battery voltage is IC307. IC307 sends the detection signal to CPU (IC301) when the battery voltage drops to 0.9 V. This is done to turn off the tone signal and the RF carrier signal before the circuit becomes unstable.

RF-87 board

• CPU and the peripheral circuit block

The CPU (IC301) is a 4-bit microprocessor, and the clock is used a 4 MHz (X301, IC303). This clock signal is sent to IC104 as the reference frequency signal of the PLL circuit. The transmission frequency is adjusted by CT301. The CPU sends out the PLL data, and controls the AF mute, RF mute, and so on.
The voltage detector circuit (IC304, IC305) detects the power supply voltage (+2.7 V) and uses it to reset the CPU with dropping power supply voltage.

• RF circuit block

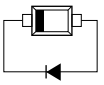
The oscillation circuit utilizes the PLL frequency synthesizer method. The VCO (CP401) is controlled by PLL IC (IC401). The carrier frequency is controlled by the serial data (PLL data) sent from the CPU to the PLL IC (IC401). The lock detection (Q401) detects the lock condition of the PLL by the output signal (LD signal) from the phase comparator in the PLL IC, and sends the signal to CPU (IC301).
The RF signal which is oscillated and modulated by the VCO (CP401) is input RF amplifier circuit (Q404, Q405). The RF signal amplified by RF amplifier circuit is output from the antenna via the low-pass filter (FL401) and isolator (CP402).
The voltage control circuit (Q402, Q403, D403) performs ON/OFF control of the power voltage for the RF circuit. This control signal is the RFM signal from the CPU (IC301). RF output level is adjusted by the RV401.

SECTION 5
SEMICONDUCTOR PIN ASSIGNMENTS

Semiconductors of which functions are equivalent are described here. For parts replacement, refer to the section of Spare Parts in this manual. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

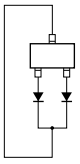
DIODE

—TOP VIEW—



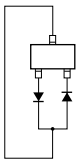
1SS367-T3 (SONY)

—TOP VIEW—



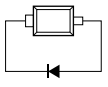
MA132WK
MA132WK-TX

-TOP VIEW-



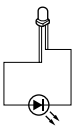
MA133
MA133-TX

-TOP VIEW-



MA729
MA729-TX

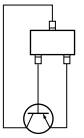
LED



LBR3378S-TP-J161K ;RED

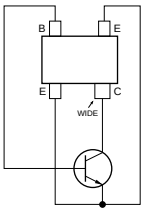
TRANSISTOR

-TOP VIEW-



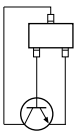
2SA1965-TL
2SB1462-Q

-TOP VIEW-



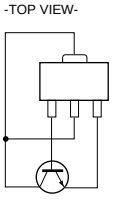
2SC5015-T1

-TOP VIEW-



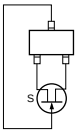
2SC4919
2SC4919-TL
2SD1328-RST
2SD1328-RST-TX
2SD2216-Q

-TOP VIEW-



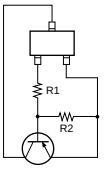
2SD1620
2SD1620-TD

-TOP VIEW-



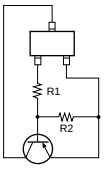
2SK377-A
2SK377-B

-TOP VIEW-



DTA143ZE-TL (R1=4.7 K, R2=47 K)
DTA144EE (R1=47 K, R2=47 K)
DTA144EE-TL (R1=47 K, R2=47 K)

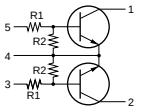
-TOP VIEW-



DTC143ZE-TL (R1=4.7 K, R2=47 K)

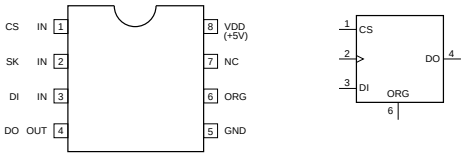
-TOP VIEW-

UMG8-TR (R1=4.7 K, R2=47 K)



AT93C46-10SI-2.7-E2 (ATMEL)FLAT PACKAGE

C-MOS 1024 (64 · 16 or 128 · 8) BIT
SERIAL ELECTRICALLY ERASABLE PROM
-TOP VIEW-

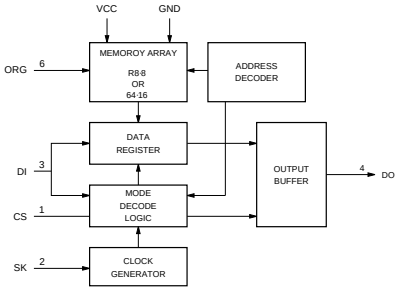


INPUT

CS ; CHIP SELECT
DI ; DATA INPUT
SK ; SERIAL CLOCK
ORG ; ORGANIZATION

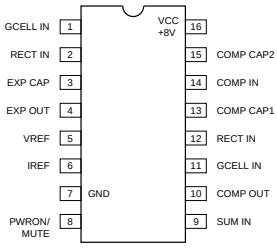
OUTPUT

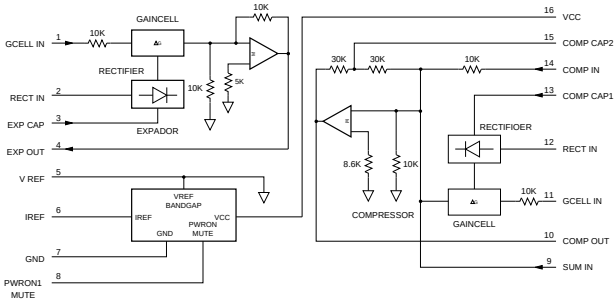
DO ; DATA OUTPUT



NE578D-T (SIGNETICS)FLAT PACKAGE

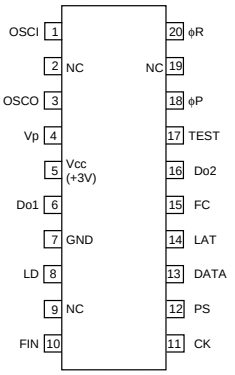
LOW POWER COMPANDOR
-TOP VIEW-



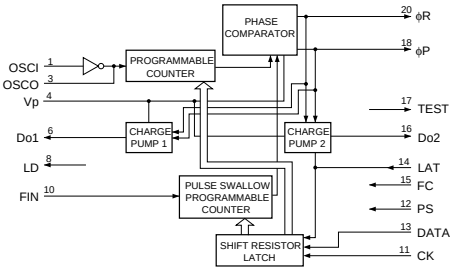


CXA1786N-T4 (SONY)FLAT PACKAGE

PLL FREQUENCY SYNTHESIZER (1.1 GHz BAND)
-TOP VIEW-

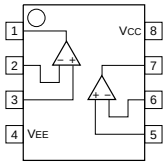


OSCI : REFERENCE FREQUENCY INPUT
OSCO : REFERENCE FREQUENCY OUTPUT
Vp : POWER SUPPLY FOR CHARGE PUMP, PHASE COMPARATOR
Do1 : CHARGE PUMP 1 OUTPUT
Do2 : CHARGE PUMP 2 OUTPUT
LD : LOCK DETECTION SIGNAL OUTPUT
ϕP : PHASE COMPARATOR OUTPUT
ϕR : PHASE COMPARATOR OUTPUT
CK : CLOCK INPUT
DATA : DATA INPUT
LAT : LATCH INPUT
PS : POWER SAVE INPUT("L":POWER SAVE MODE)
FC : SELECTION TERMINAL FOR PHASE OF PHASE COMPARATOR OUTPUT AND COUNTER OUTPUT SIGNAL TO TEST TERMINAL
TEST : OUTPUT FOR DIVIDING SIGNAL OF COUNTER



NJM2100E (JRC)FLAT PACKAGE
NJM2100E-T1

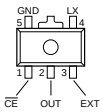
DUAL OPERATIONAL AMPLIFIERS
(DUAL-SUPPLY TYPE)
–TOP VIEW–

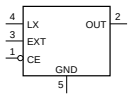


TYPE	VCC	VEE
062/072/082/4556A/ M5218/BA15218/ 33178/34182 TYPES	+2 to +16V	−2 to −16V
4580 TYPE	+2 to +18V	−2 to −18V
5532 TYPE	+3 to +20V	−3 to −20V
CXA1297 TYPE	+5 to +12V	−5 to −12V
M5219/M5220 TYPES	+5 to +22.5V	−5 to −22.5V
NJM2100 TYPE	+1 to +3.5V	−1 to −3.5V
OP-297 TYPE	+2 to +20V	−2 to −20V
OTHERS	+5 to +16V	−5 to −16V

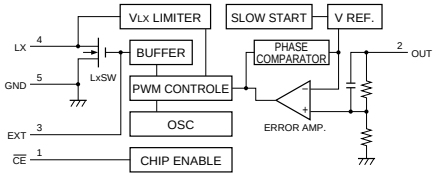
RH5RH303B-T1 (RICOH)

C-MOS PWM STEP-UP DC/DC CONVERTER
–TOP VIEW–



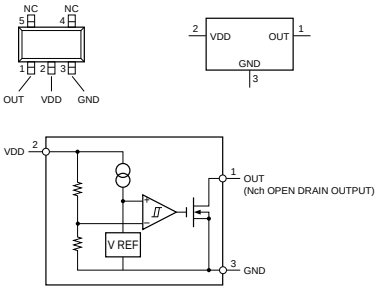


LX ; SWITCHING TERMINAL (OPEN DRAIN)
EXT ; EXTERNAL TRANSISTOR DRIVE (CMOS OUTPUT)
$\overline{CE}$; CHIP ENABLE
OUT ; STEP-UP OUTPUT VOLTAGE MONITOR



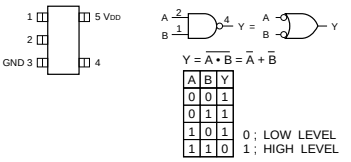
RN5VT09AA-TL
RN5VT09AA-TR (RICOH)

C-MOS VOLTAGE DETECTOR
–TOP VIEW–



TC4S11F (TOSHIBA)CHIP PACKAGE
TC4S11F(TE85R)

C-MOS 2-INPUT NAND GATE
— TOP VIEW —



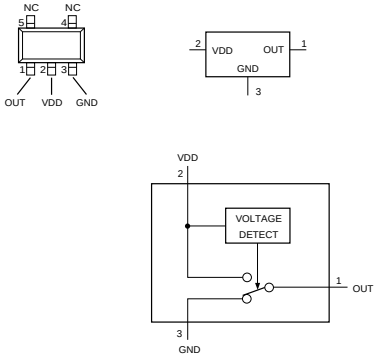
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TYPE	VDD
7S00F 7S00FU	+2 to +6 V
4S11F 4SU11F	+3 to +18 V
7SH00FU	+2 to +5.5 V

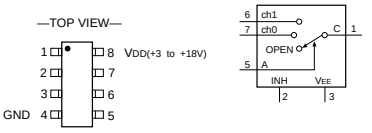
S-80720SN-DH-T2 (SEIKO I AND E)
S-80727SN-DQ-T2 (SEIKO I AND E)

C-MOS VOLTAGE DETECTOR
-TOP VIEW-



TC4W53FU (TOSHIBA)CHIP PACKAGE
TC4W53FU(TE12R)

C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER

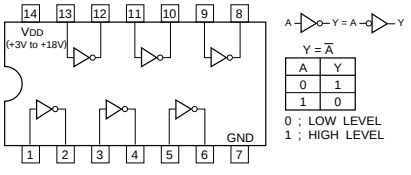


CONT.INPUT		ON
INH	A	CHANNEL
0	0	ch0
0	1	ch1
1	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC4069UBF-EL (RCA)

C-MOS INVERTER
-TOP VIEW-



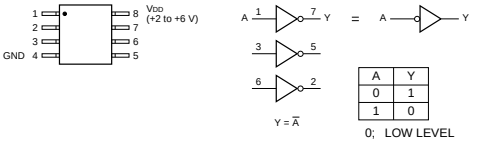
Y = $\overline{A}$

A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TC7WU04FU(TE12R) (TOSHIBA)CHIP PACKAGE

C-MOS HEX INVERTERS
-TOP VIEW-

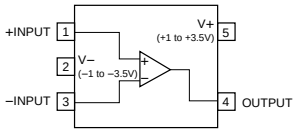


A	Y
0	1
1	0

0; LOW LEVEL
1; HIGH LEVEL

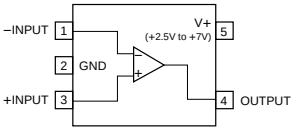
NJM2107F (JRC)FLAT PACKAGE
NJM2107F -TE2

SINGLE OPERATIONAL AMPLIFIER
—TOP VIEW—



NJM2406F (JRC)FLAT PACKAGE
NJM2406F -TE2

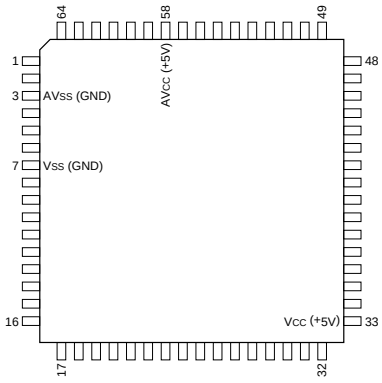
SINGLE COMPARATOR
—TOP VIEW—



CPU PIN DESCRIPTION : IC301

HD6473614H

-TOP VIEW-

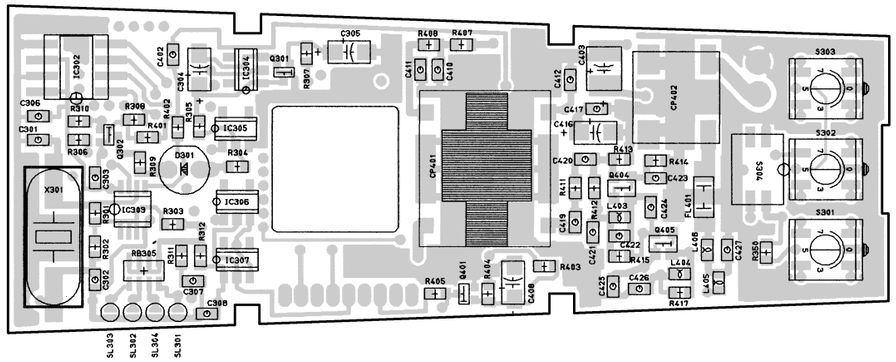


PIN	SIGNAL	I/O	DESCRIPTION
3	AVss	—	Ground
7	Vss	—	Ground
6	X1	IN	Clock input (32.768 kHz)
8	OSC1	IN	Clock input (4 MHz)
10	RESET	IN	Reset (L: reset)
14	LED	OUT	LED
15	ID	OUT	Not used
16	POFF	IN	Power sw ON/OFF detection
19	CH3-8	IN	CH3-8
20	CH3-4	IN	CH3-4
21	CH3-2	IN	CH3-2
22	CH3-1	IN	CH3-1
23	CH2-8	IN	CH2-8
24	CH2-4	IN	CH2-4
25	CH2-2	IN	CH2-2
26	CH2-1	IN	CH2-1
28	LVD	OUT	LVD
30	AFM	OUT	AF-Muting
33	Vcc	IN	Power supply
34	I/F CTS	IN	Communication
35	I/F TEST	IN	Communication
36	I/F RTS	OUT	Communication
37	I/F TXD	OUT	Communication
38	I/F RXD	IN	Communication

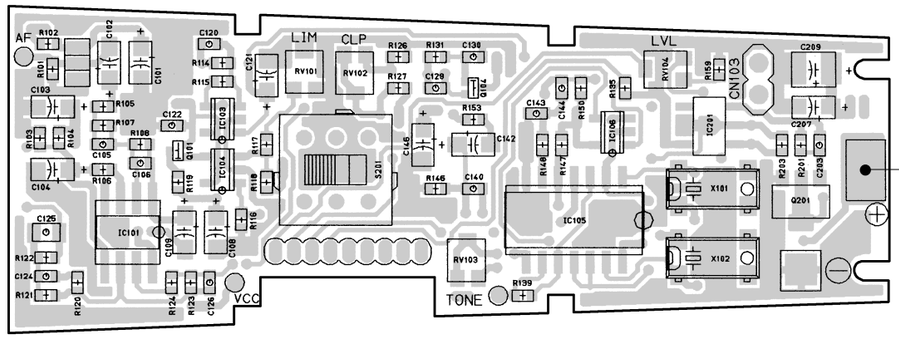
PIN	SIGNAL	I/O	DESCRIPTION
42	CH1-1	IN	CH1-1
43	CH1-2	IN	CH1-2
44	CH1-4	IN	CH1-4
45	CH1-8	IN	CH1-8
46	TV	IN	TV
51	CLK	OUT	Clock for PLL/EEPROM
52	LAT	OUT	PLL latch
53	RFM	OUT	RF-Muting
54	LD	IN	Lock detection for PLL
55	CS	OUT	Chip select for EEPROM
56	DATA	OUT	Data for PLL/EEPROM
57	DO	IN	Data for EEPROM
58	Vcc	IN	Power supply
60	BAT-H	IN	Battery detection
61	BAT-L	IN	Battery detection
59, 62, 63, 64	—	IN	Setting destination for WRT-800A
1, 2, 4, 7, 11,12, 17, 18	GND	IN	GND
5, 9, 13, 27, 29, 31, 32, 39 to 41 47 to 50	—	—	NC

SECTION 6
SCHEMATIC DIAGRAMS AND BOARD LAYOUTS

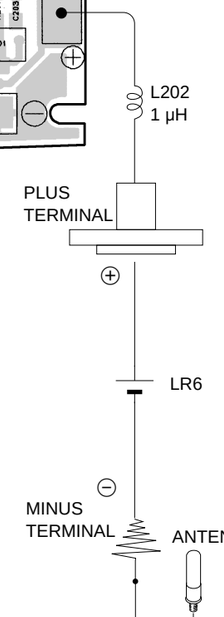
6-1. Board Layouts

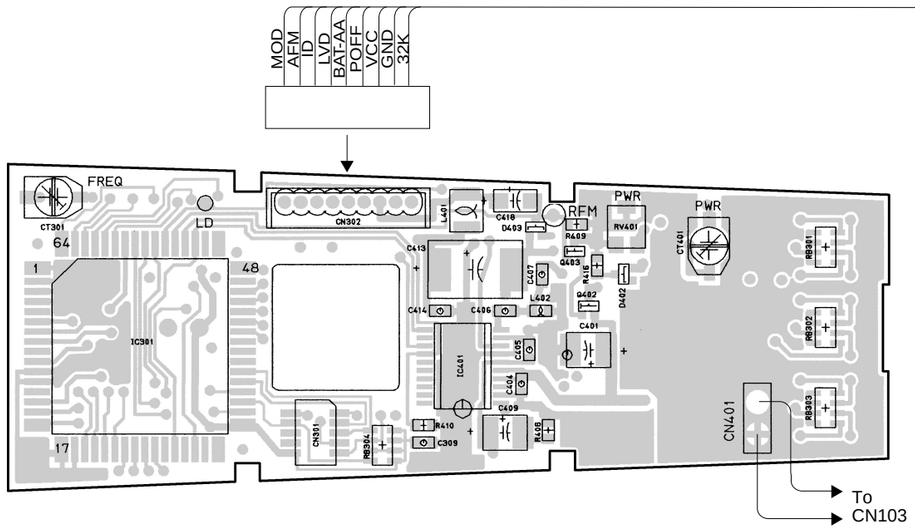


RF-87 BOARD
(A SIDE)
BOARD NO. 1-668-098-11

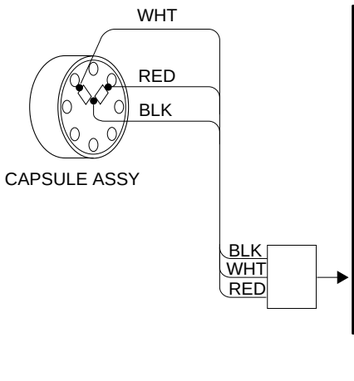


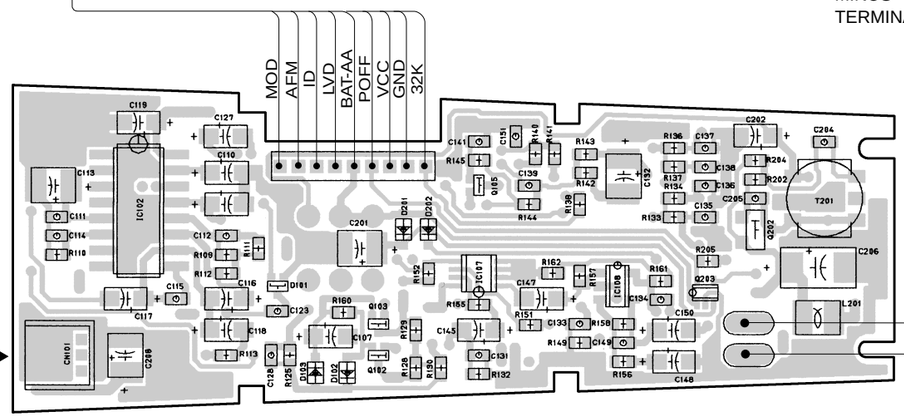
AU-258 BOARD
(A SIDE)
BOARD NO. 1-668-097-11





RF-87 BOARD
(B SIDE)
BOARD NO. 1-668-098-11

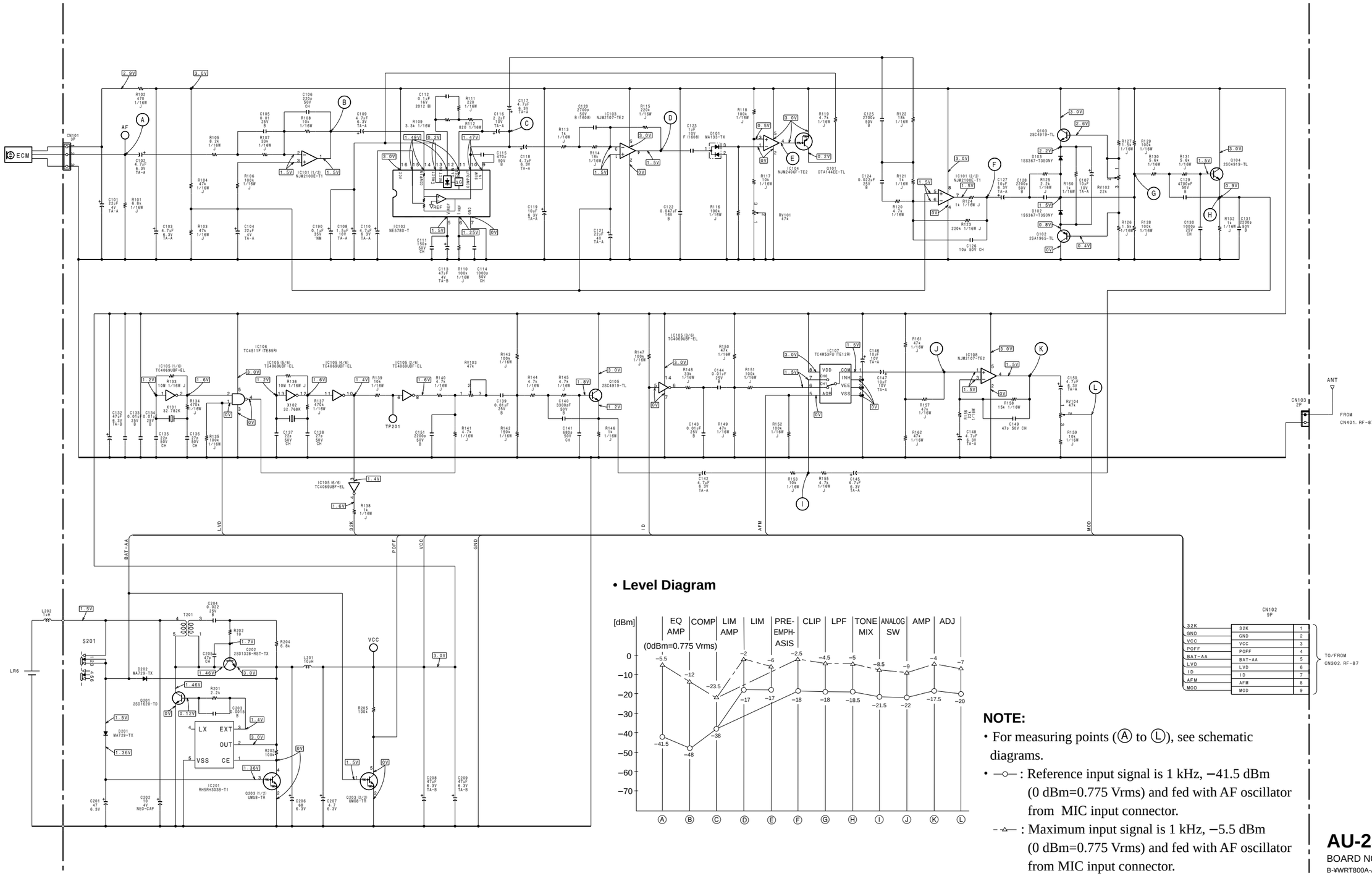




AU-258 BOARD
(B SIDE)
BOARD NO. 1-668-097-11

6-2. Schematic Diagrams

WRT-800A (AU) : S/N 600001 and Higher



• Level Diagram

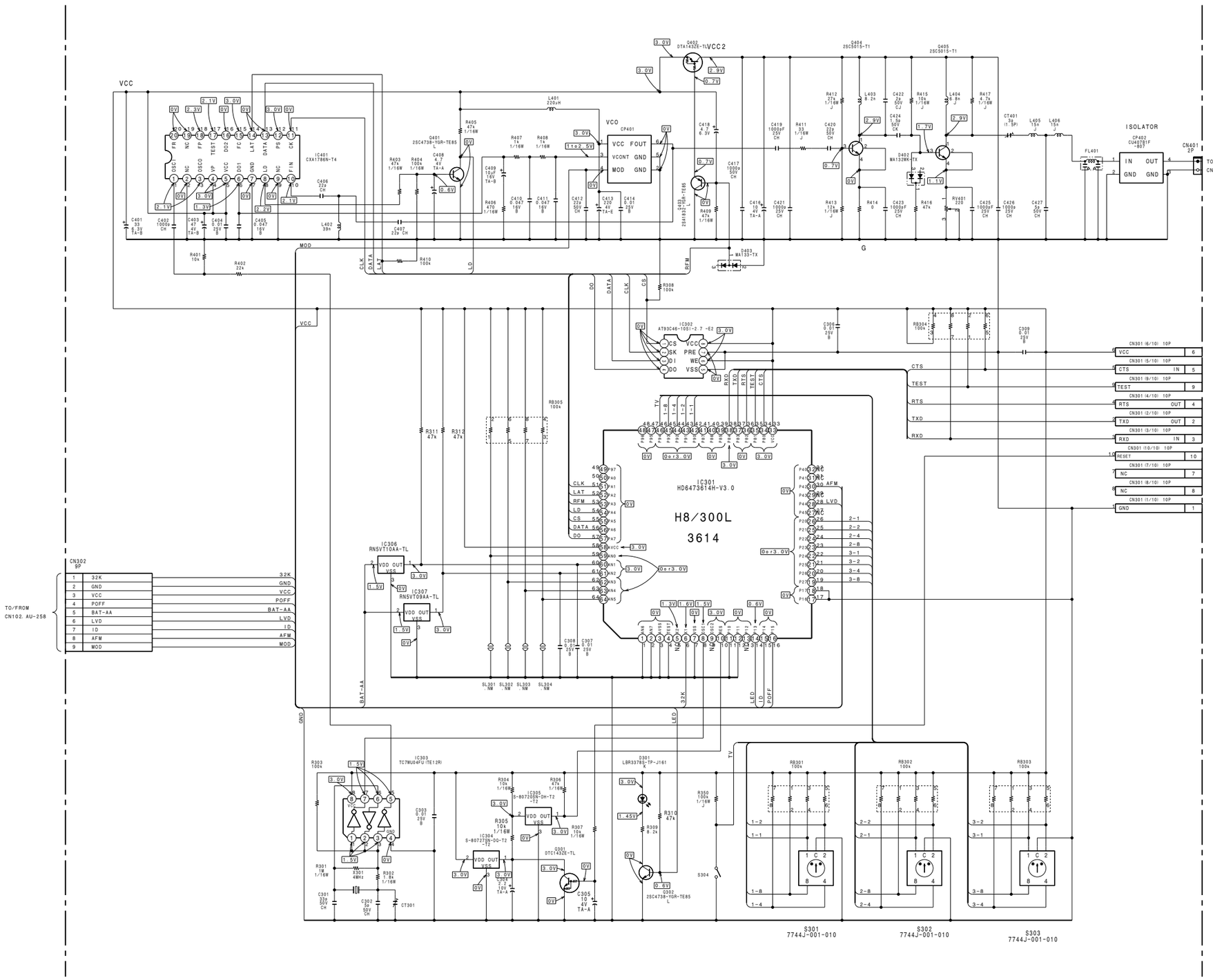
NOTE:

- For measuring points (Ⓐ to Ⓛ), see schematic diagrams.
- —○— : Reference input signal is 1 kHz, −41.5 dBm (0 dBm=0.775 Vrms) and fed with AF oscillator from MIC input connector.
- -△- : Maximum input signal is 1 kHz, −5.5 dBm (0 dBm=0.775 Vrms) and fed with AF oscillator from MIC input connector.

AU-258

BOARD NO. 1-668-097-11

B-¥WRT800A-AU258-S/M



RF-87

BOARD NO. 1-668-098-11

B-¥WRT800A-RF87AU-S/M

SECTION 7
SPARE PARTS

7-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP(Supply Code) column of the spare parts list may be not stocked. Therefore, the delivery date will be delayed.

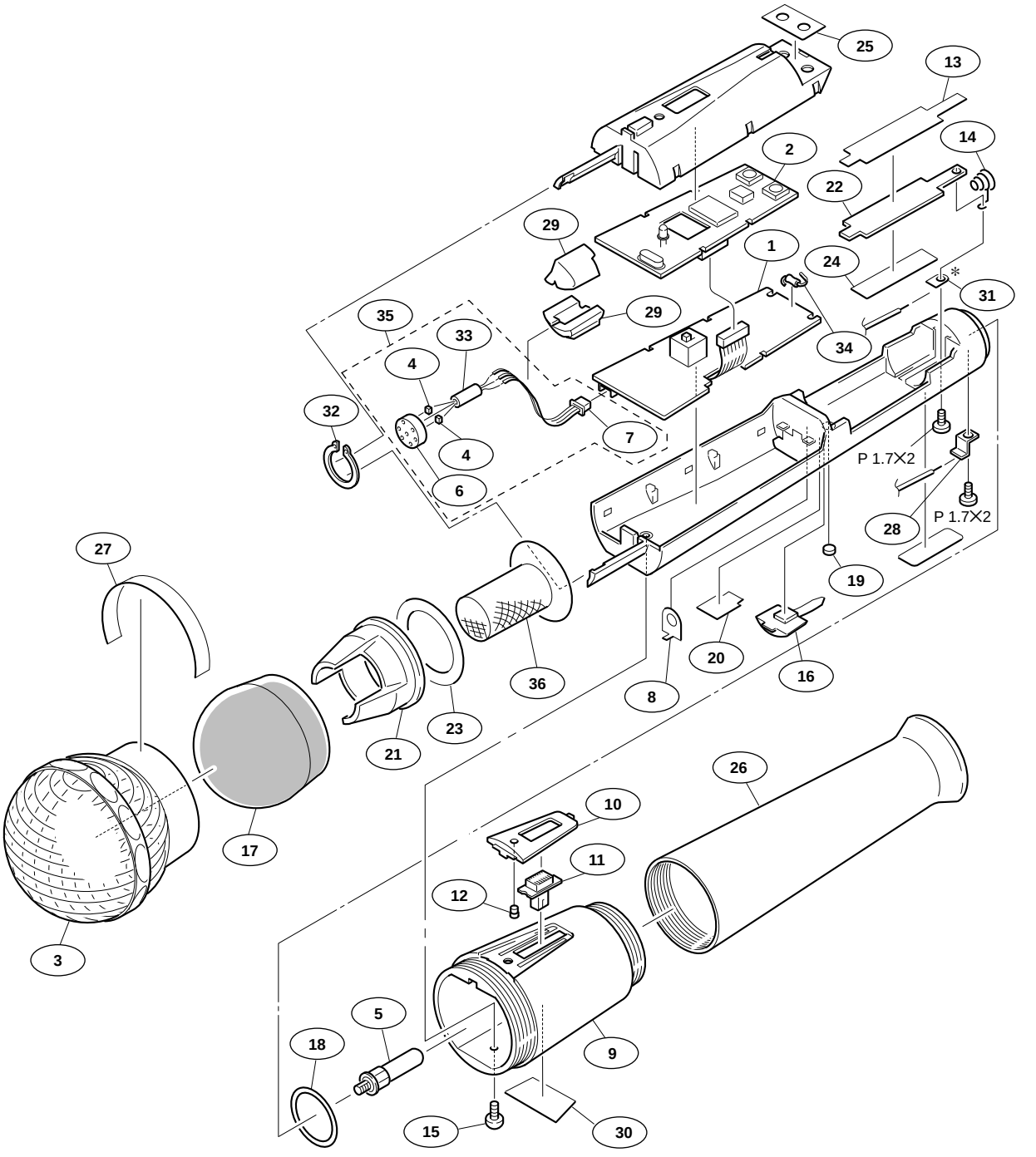
4. Units Representation

The following represented units are changed or omitted in writing.

	Units	Representation
Capacitance	μF	uF
Inductance	μH	uH
Resistance	Ω	Abbreviation
Temperature	°C	XXX-DEG-C

7-2. Exploded View and Parts List

No.	Part No.	SP	Description
1	A-8318-649-A	o	MOUNTED CIRCUIT BOARD, AU-258
2	A-8318-656-A	o	MOUNTED CIRCUIT BOARD, RF-87
3	X-3679-322-2	o	CAGE ASSY
4	1-163-137-00	s	CAP, CHIP CERAMIC 680PF CH 2012
5	1-501-945-11	s	ANTENNA
6	1-542-340-11	o	MICROPHONE UNIT KUB8403
7	1-956-140-11	o	HARNESS, SUB (3P)
8	2-540-996-01	s	TERMINAL BOARD, PLUS
9	3-603-329-11	o	GRIP B
10	3-603-330-11	o	COVER, SWITCH
11	3-603-331-01	o	KNOB, SWITCH
12	3-603-332-01	o	STICK LIGHT
13	3-603-334-02	s	SEAL BATTERY
14	3-603-335-01	s	COIL SPRING BATTERY
15	3-603-336-01	s	SCREW LR TYPE
16	3-603-337-02	o	SCREWDRIVER SW
17	3-603-339-01	o	SCREEN
18	3-603-342-01	o	P15, O RING
19	3-603-343-01	o	MAGNET
20	3-603-344-01	s	SHEET, CHLORIDE VINYL
21	3-605-835-02	o	RING, ADJUSTMENT
22	3-605-836-02	o	PLATE,STICK
23	3-605-837-01	s	RING SHEET,ADHESIVE
24	3-605-838-01	s	SHEET,ADHESIVE
25	3-612-848-01	o	LABEL SW
26	3-608-713-02	o	GRIP A
27	3-608-716-01	o	SEAL ORNAMENTAL
28	3-608-717-01	o	ANT TERMINAL RELAY
29	3-609-615-02	o	PAD RUBBER
30	3-612-847-01	o	LABEL, MODEL NUMBER
31	7-623-505-01	s	LUG, 2
32	7-624-197-41	s	STOP RING 17, TYPE-C
33	1-500-547-11	o	BEAD, FERRITE
34	1-414-142-11	s	INDUCTOR, MICRO 1uH
35	A-8319-010-A	s	UNIT ASSY(CE)
36	3-613-376-01	o	NET INNER



* When using Lug. 2 (Part No. 7-623-505-01), cut it.
Refer to section 2-2-1.

7-3. Electrical Parts List

AU-258 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-649-A	o	MOUNTED CIRCUIT BOARD, AU-258
(This assembly includes the following parts.)			
1pc	1-565-128-11	o	CONNECTOR, HOUSING 9P, FEMALE
C101	1-104-847-11	s	TANTALUM, CHIP 22uF 20% 4V
C102	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C103	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C104	1-104-847-11	s	TANTALUM, CHIP 22uF 20% 4V
C105	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C106	1-162-957-11	s	CERAMIC, CHIP 220PF 5% 50V
C107	1-104-851-11	s	TANTALUM 10uF 20% 10V
C108	1-107-688-11	s	TANTALUM, CHIP 1.5uF 20% 10V
C109	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C110	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C111	1-164-217-11	s	CERAMIC, CHIP 150PF 5% 50V
C112	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C113	1-104-908-11	s	TANTALUM, CHIP 47uF 20% 4V
C114	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C115	1-164-315-11	s	CERAMIC, CHIP 470PF 5% 50V
C116	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C117	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C118	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C119	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C120	1-162-979-11	s	CERAMIC, CHIP 0.0027uF 10% 50V
C121	1-104-847-11	s	TANTALUM, CHIP 22uF 20% 4V
C122	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C123	1-115-156-11	s	CERAMIC 1uF 10V
C124	1-164-227-11	s	CERAMIC, CHIP 0.022uF 10% 25V
C125	1-115-417-11	s	CERAMIC, CHIP 2700PF 5% 25V
C126	1-162-915-11	s	CERAMIC, CHIP 10PF 50V
C127	1-104-851-11	s	TANTALUM 10uF 20% 10V
C128	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C129	1-162-968-11	s	CERAMIC, CHIP 0.0047uF 10% 50V
C130	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C131	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C132	1-110-569-21	s	TANTALUM 47uF 10% 6.3V
C133	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C134	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C135	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C136	1-162-920-11	s	CERAMIC, CHIP 27PF 5% 50V
C137	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C138	1-162-920-11	s	CERAMIC, CHIP 27PF 5% 50V
C139	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C140	1-162-967-11	s	CERAMIC, CHIP 0.0033uF 10% 50V
C141	1-115-412-11	s	CERAMIC 680PF 5% 25V
C142	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C143	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C144	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C145	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C146	1-104-851-11	s	TANTALUM 10uF 20% 10V
C147	1-104-851-11	s	TANTALUM 10uF 20% 10V
C148	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C149	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C150	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C151	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C201	1-110-569-11	s	TANTALUM, CHIP 47uF 20% 6.3V
C202	1-115-167-11	s	TANTALUM, CHIP 10uF 20% 4V
C203	1-162-965-11	s	CERAMIC, CHIP 0.0015uF 10% 50V
C204	1-164-227-11	s	CERAMIC, CHIP 0.022uF 10% 25V

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Ref. No. or Q'ty	Part No.	SP	Description
C205	1-162-923-11	s	CERAMIC, CHIP 47PF 5% 50V
C206	1-107-854-11	s	TANTALUM, CHIP 68uF 20% 6.3V
C207	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C208	1-110-569-21	s	TANTALUM 47uF 10% 6.3V
C209	1-110-569-21	s	TANTALUM 47uF 10% 6.3V
CN101	1-565-150-11	o	CONNECTOR, ANGLE, 3P
CN102	1-956-139-11	o	HARNESS, SUB (CN2)
CN103	1-566-474-11	s	PIN, SOCKET 2P
D101	8-719-421-69	s	DIODE MA133
D102	8-719-049-09	s	DIODE 1SS367-T3SONY
D103	8-719-049-09	s	DIODE 1SS367-T3SONY
D201	8-719-420-51	s	DIODE MA729
D202	8-719-420-51	s	DIODE MA729
IC101	8-759-293-74	s	IC NJM2100E
IC102	8-759-278-03	s	IC NE578D-T
IC103	8-759-710-79	s	IC NJM2107F
IC104	8-759-710-82	s	IC NJM2406F
IC105	8-759-369-95	s	IC TC4069UBF-EL
IC106	8-759-209-69	s	IC TC4S11F
IC107	8-759-082-61	s	IC TC4W53FU
IC108	8-759-710-79	s	IC NJM2107F
IC201	8-759-380-06	s	IC RH5RH303B-T1
L201	1-412-029-11	s	INDUCTOR CHIP 10uH
Q101	8-729-928-27	s	TRANSISTOR DTA144EE
Q102	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q103	8-729-015-66	s	TRANSISTOR 2SC4919
Q104	8-729-015-66	s	TRANSISTOR 2SC4919
Q105	8-729-015-66	s	TRANSISTOR 2SC4919
Q201	8-729-821-15	s	TRANSISTOR 2SD1620
Q202	8-729-420-74	s	TRANSISTOR 2SD1328-RST
Q203	8-729-929-73	s	TRANSISTOR UMG8-TL
R101	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R102	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R103	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R104	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R105	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R106	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R107	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R108	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R109	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R110	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R111	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R112	1-216-820-11	s	METAL, CHIP 820 5% 1/16W
R113	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R114	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R115	1-216-849-11	s	METAL, CHIP 220K 5% 1/16W
R116	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R117	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R118	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R119	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R120	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R121	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R122	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R123	1-216-849-11	s	METAL, CHIP 220K 5% 1/16W
R124	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R125	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R126	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W

(AU-258 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R127	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R128	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R129	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R130	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R131	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R132	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R133	1-219-570-11	s	METAL 10M 5% 1/16W
R134	1-216-853-11	s	METAL, CHIP 470K 5% 1/16W
R135	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R136	1-219-570-11	s	METAL 10M 5% 1/16W
R137	1-216-853-11	s	METAL, CHIP 470K 5% 1/16W
R138	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R139	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R140	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R141	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R142	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R143	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R144	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R145	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R146	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R147	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R148	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R149	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R150	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R151	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R152	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R153	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R155	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R156	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R157	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R158	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R159	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R160	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R161	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R162	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R201	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R202	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R203	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R204	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R205	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
RV101	1-238-858-11	s	RES, ADJ, CERMET 47K
RV102	1-238-857-11	s	RES, ADJ, CERMET 22K
RV103	1-238-858-11	s	RES, ADJ, CERMET 47K
RV104	1-238-858-11	s	RES, ADJ, CERMET 47K
S201	1-762-712-11	s	SWITCH, SLIDE
T201	1-473-727-21	s	DC-DC CONVERTER
X101	1-767-314-11	s	CRYSTAL 32.782kHz
X102	1-760-928-21	s	CRYSTAL 32.768kHz

RF-87 BOARD

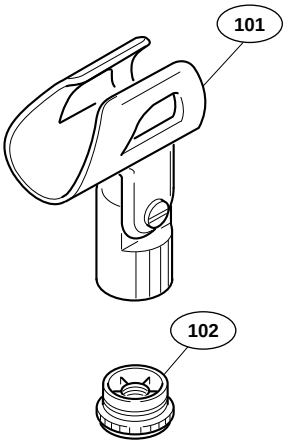
Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-656-A	o	MOUNTED CIRCUIT BOARD, RF-87(AU66)
(This assembly includes the following parts.)			
C301	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C302	1-162-910-11	s	CERAMIC, CHIP 5PF 50V
C303	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C304	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C305	1-135-201-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C306	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C307	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C308	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C309	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C401	1-104-752-11	s	TANTALUM, CHIP 33uF 20% 6.3V
C402	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C403	1-104-908-11	s	TANTALUM, CHIP 47uF 20% 4V
C404	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C405	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C406	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C407	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C408	1-135-151-21	s	TANTALUM 4.7uF 20% 4V
C409	1-104-913-11	s	TANTALUM 10uF 10% 16V
C410	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C411	1-165-176-11	s	CERAMIC 0.047uF 10% 16V
C412	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C413	1-113-996-11	s	TANTALUM, CHIP 220uF 10% 4V
C414	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C416	1-135-201-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C417	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C418	1-135-181-21	s	TANTALUM, CHIP 4.7uF 10% 6.3V
C419	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C420	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C421	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C422	1-162-907-11	s	CERAMIC, CHIP 2PF 50V
C423	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C424	1-162-906-11	s	CERAMIC 1.5PF 50V 5%
C425	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C426	1-115-416-11	s	CERAMIC 1000PF 5% 25V
C427	1-162-910-11	s	CERAMIC, CHIP 5PF 50V
CN301	1-573-984-11	o	CONNECTOR, BOARD TO BOARD 10P
CN302	1-565-142-11	o	CONNECTOR, STRAIGHT, 9P MALE
CN401	1-569-160-11	o	SOCKET, SIL 2P
CP401	1-760-668-21	s	VOC 790MHZ
CP402	1-251-235-11	s	ISOLATOR CU407BIF-807 (For WRT-800A
CT301	1-141-322-11	s	CAP, CHIP TYPE TRIMMER 20PF
CT401	1-141-435-21	s	CAP, CHIP TYPE TRIMMER 3PF
D301	8-719-048-14	s	DIODE LBR3378S-TP-J161K
D402	8-719-421-67	s	DIODE MA132WK
D403	8-719-421-69	s	DIODE MA133
FL401	1-233-939-11	s	FILTER, LOW PASS (SMD TYPE)
IC301	8-759-530-21	o	IC HD6473614H-WRT825-V3.0
IC302	8-759-277-62	s	IC AT93C46-10SI-2.7-E2
IC303	8-759-096-87	s	IC TC7WU04FU(TE12R)
IC304	8-759-278-36	s	IC S-80727SN-DQ-T2
IC305	8-759-278-37	s	IC S-80720SN-DH-T2
IC306	8-759-388-18	s	IC RN5VT10AA-TR
IC307	8-759-388-18	s	IC RN5VT10AA-TR
IC401	8-752-069-39	s	IC CXA1786N

(RF-87 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
L401	1-410-658-31	s	INDUCTOR, CHIP 220UH
L402	1-414-296-11	o	INDUCTOR 39nH
L403	1-414-462-11	s	INDUCTOR 8.2nH
L404	1-414-461-11	s	INDUCTOR 6.8nH
L405	1-414-465-31	s	INDUCTOR 15nH
L406	1-414-465-31	s	INDUCTOR 15nH
Q301	8-729-929-11	s	TRANSISTOR DTC143ZE
Q302	8-729-425-64	s	TRANSISTOR 2SD2216-Q
Q401	8-729-425-64	s	TRANSISTOR 2SD2216-Q
Q402	8-729-928-58	s	TRANSISTOR DTA143ZE-TL
Q403	8-729-425-50	s	TRANSISTOR 2SB1462-Q
Q404	8-729-039-32	s	TRANSISTOR 2SC5015-T1
Q405	8-729-039-32	s	TRANSISTOR 2SC5015-T1
R301	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R302	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R303	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R304	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R305	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R306	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R307	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R308	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R309	1-216-832-11	s	METAL, CHIP 8.2K 5% 1/16W
R310	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R311	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R312	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R350	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R401	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R402	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R403	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R404	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R405	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R406	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R407	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R408	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R409	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R410	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R411	1-216-803-11	s	METAL, CHIP 33 5% 1/16W
R412	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R413	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R414	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R415	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R416	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R417	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
RB301	1-236-907-11	s	NETWORK RESISTOR (CHIP) 100Kx4
RB302	1-236-907-11	s	NETWORK RESISTOR (CHIP) 100Kx4
RB303	1-236-907-11	s	NETWORK RESISTOR (CHIP) 100Kx4
RB304	1-236-907-11	s	NETWORK RESISTOR (CHIP) 100Kx4
RB305	1-236-907-11	s	NETWORK RESISTOR (CHIP) 100Kx4
RV401	1-238-851-11	s	RES, ADJ, CERMET 220
S301	1-771-366-11	s	SWITCH, ROTARY CORD
S302	1-771-366-11	s	SWITCH, ROTARY CORD
S303	1-771-366-11	s	SWITCH, ROTARY CORD
S304	1-692-881-41	s	SWITCH, SLIDE
X301	1-760-474-11	s	CRYSTAL 1.0MHz

7-4. Accessories Supplied

Ref. No. or Q'ty	Part No.	SP	Description
1pc	2-509-712-21	s	SCREW
1pc	3-860-354-31	s	MANUAL, INSTRUCTION
101	A-8315-501-A	s	HOLDER ASSY, MICROPHONE
102	2-100-951-04	s	ADAPTER, SCREW, STAND, SAD-34



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